YVES J. CHABAL
Department of Materials Science and Engineering
The University of Texas at Dallas
800 West Campbell Road, Mail Station RL 10, Richardson, Texas 75080-3021
(972) 883-5751
www.utdallas.edu/~chabal

Educational History

- Ph.D. Physics, January 1980, Cornell University, Ithaca, NY
  Dissertation title: "Infrared Study of Hydrogen Chemisorbed on W(100) by Surface Electromagnetic Wave Spectroscopy"
- M.Sc. Physics, January 1977, Cornell University, Ithaca, NY
- A.B. Physics, June 1974, Princeton University, Princeton, NJ, (*summa cum laude*)

Employment History

- Head, department of Materials Science and Engineering, 9/08-present, UT Dallas
- Professor, Materials Science and Engineering and Physics, 1/08-present, UT Dallas
- Affiliated Professor in Physics, Mechanical Eng. and Electrical Eng., 1/08-present UT Dallas
- Affiliated Professor in Chemistry, 1/12-present UT Dallas
- Texas Instrument Distinguished University Chair in Nanoelectronics, 1/08-present, UT Dallas
- Director, Laboratory for Surface Modification, 2004-07, Rutgers University
- Professor, Chemistry, Biomedical Engineering and Physics, 2003-07, Rutgers University, NJ
- Consulting Member of Technical Staff, 2001-02, Bell Labs, Agere Systems, Murray Hill, NJ
- Distinguished Member of Technical Staff, 1995-01, Bell Labs, Lucent Technologies,Murray Hill,NJ
- Member of Technical Staff, 1981-94, AT&T Bell Labs, Murray Hill, NJ
- Visiting Scientist, CNRS, 1989-90, Thiais, France
- Postdoctoral Fellow, 1980-81, Bell Labs, AT&T, Murray Hill, NJ

Research Interests

- Surface chemical functionalization of semiconductors and oxides for nanotechnology; atomic layer deposition, bio-sensors; organic electronics, nanoelectronics (including graphene-based structures); surface characterization with photons (e.g. infrared), electrons, ions and imaging.
- Hydrogen storage and carbon capture; gas adsorption and separation in nanoporous materials.

Professional Recognitions and Honors

- Associate Member of Sigma Xi Society, 1974
- **Co-chairman** of the *6th Int'l Conf. on Vibrations at Surfaces*, 1989
- Program committee for the *International Symposium on Advanced Microelectronics and Device Processing* (Japan)
- On the **Executive Committee** of the AVS **Surface Science Division,** 1990-94
- On the **advisory Editorial Board** of *Vibrational Spectroscopy***,** 1991-94
- On the **advisory Editorial Board** of *Chemical Physics Letters***,** 1991-94
- Co-organizer: ***APS Focus session on Semiconductor Surface Processing***, 1994
- Organizing committee member of the **Physical Electronics Conference**, 1993-97
- **Vice chair, Program chair and chair of the Electronic and Materials Processing Division** of the *American Vacuum Society***,** 1996-98

- Organizer: *APS FIAP symp. on Dynamics of Silicon Oxidation & Etching*, 1998
- **Editor** of *Fundamental Aspects of Silicon Oxidation* (Springer Series), 2000
- On organizing committee of *Vibrations at Surfaces*. (Bar Harbor, Maine), 2004
- On Advisory committee of *Vibrations at Surfaces* (Orlando, FL), 2010
- **Co-Chair** of the international *Conference on Atomic Layer Deposition***,** 2007
- **Board of Directors** of the *Materials Research Society*, 2008-2010
- **Associate Editor**, *Journal of Vacuum Science and Technology,* 2009-2014
- **Program Chair** and Chair of the *Surface Science Division*, AVS, 2009-2010
- **Member at Large** of Executive Committee (*American Physical Society),* 2010-2013
- **Editorial Advisory** Board of *Surface Science*, 2010-2015
- **Editorial Advisory** Board of *Chemistry of Materials*, 2012-2015
- **Editorial Advisory** Board of *Metal Organics Frameworks*, 2012-2015
- **Chair**, *Physical Electronic Conference*, 2011-2015
- **Chair** and Organizer of *2012 Physical Electronic Conference* (UT Dallas, TX)
- **International advisory committee** of *ALD conference*, 2010-2013
- Program committee: *16th International Conference on Solid Films and Surfaces* (ICSFS 16)
- Program committee: *International Conference on the physics of Semiconductors* (ICPS 2014)
- **AVS Trustee** (2014-2017)

Professional Awards and Fellowships

- Suichi Kusaka Prize in Physics, 1974
- Bell Laboratories Affirmative Action Award, 1994
- **Fellow:** AVS, 1995; American Physical Society, 1995; Materials Research Society, 2012
- Best paper award, 1996 and 1997:IEEE Int'l Conf. on Silicon-on-insulator
- IBM Faculty Award, 2003
- Rutgers Board of Trustees Award for Excellence in Research, 2006
- Texas Instrument Distinguished University Chair in Nanoelectronics, 2008
- **Davisson-Germer Prize** in Surface Physics (American Physical Society), 2009
- Tech Titan technology innovator Award, 2010
- **ACS** award for encouraging women into careers in the chemical sciences, 2012
- **Medard W. Welch Award** from the AVS, 2012
- **2015 Chaire d'Attractivité for the project IDEX** of the « Université Fédérale Toulouse Midi-Pyrénées »

Professional Memberships

- Member of the AVS, American Physical Society, American Chemical Society, and Materials Research Society, Electrochemical Society, TMS.

Publications and presentations

Total Citations: >20,000. SCI determined H-factor =71.

Book chapters:

1. S. M. Rupich, Y.J. Chabal, *Surface Chemical Composition and Morphology,* in Handbook of Silicon Wafer Cleaning Technology 3rd ed, edited by K.A. Reinhardt & W. Kern, Elsevier (2017).

2. E.C. Mattson and Y.J. Chabal, *Adsorption Site, Bonding Configuration, Reactions and Mass Transport at Surfaces*, in Springer Handbook of Surface Science, edited by M. Rocca, L. Vattuone and T. Rahman. Springer (2017)

Publications:

501. Thampy, S., Zheng, Y., Dillon, S., (...), Cho, K., Hsu, J.W.P., Superior catalytic performance of Mn-Mullite over Mn-Perovskite for NO oxidation, *Catalysis Today* **2017**, (in press)

500. Baiyan Li; Xinglong Dong; Hao Wang, D. M.; Kui Tan; Stephanie Jensen; Benjamin J. Deibert; Joseph Butler; Jeremy Cure; Zhan Shi; Timo Thonhauser; Yves J. Chabal; Yu Han; Li, J., Capture of organic iodides from nuclear waste by metal-organic framework based molecule traps. *Nature communications* **2017,** accepted.

499. Wang, Z., Gao, Y., Chabal, Y.J., Balkus, K.J., Oxidative Dehydrogenation of Cyclohexane and Cyclohexene over Y-doped CeO2 Nanorods, Catalysis Letters **2017**, 147(3), pp. 738-744.

498. Rao, R. G.; Blume, R.; Hansen, T. W.; Fuentes, E.; Dreyer, K.; Moldovan, S.; Ersen, O.; Hibbitts, D. D.; Chabal, Y. J.; Schlögl, R.; Tessonnier, J.-P., Interfacial charge distributions in carbon-supported palladium catalysts. *Nature Communications* **2017,** 8, (1), 340.

497. Walsh, L.A., Mohammed, S., Sampat, S.C., (...), Malko, A.V., Hinkle, C.L., Oxide-related defects in quantum dot containing Si-rich silicon nitride films, Thin Solid Films **2017**, 636, pp. 267-272.

496. Hanson, C.J., Hartmann, N.F., Singh, A., (...), Htoon, H., Hollingsworth, J.A., Giant PbSe/CdSe/CdSe Quantum Dots: Crystal-Structure-Defined Ultrastable Near-Infrared Photoluminescence from Single Nanocrystals, Journal of the American Chemical Society **2017**, 139(32), pp. 11081-11088.

495. Dangerfield, A., Nanayakkara, C.E., Mallikarjunan, A., (...), Estève, A., Chabal, Y.J., Role of Trimethylaluminum in Low Temperature Atomic Layer Deposition of Silicon Nitride, Chemistry of Materials **2017**, 29(14), pp. 6022-6029.

494. Cabrera, Y., Rupich, S.M., Shaw, R., (...), Malko, A.V., Chabal, Y.J., Energy transfer from colloidal nanocrystals to strongly absorbing perovskites, Nanoscale **2017**, 9(25), pp. 8695-8702.

493. Nanayakkara, C.E., Liu, G., Vega, A., (...), Kanjolia, R.K., Chabal, Y.J., Reaction Mechanisms of the Atomic Layer Deposition of Tin Oxide Thin Films Using Tributyltin Ethoxide and Ozone, Langmuir **2017**, 33(24), pp. 5998-6004.

492. Gao, Y., Marín, L., Mattson, E.C., (...), Estève, A., Chabal, Y.J., Basic Mechanisms of Al Interaction with the ZnO Surface, Journal of Physical Chemistry C **2017**, 121(23), pp. 12780-12788.

491. Tan, K., Zuluaga, S., Wang, H., (...), Thonhauser, T., Chabal, Y.J., Interaction of Acid Gases SO2 and NO2 with Coordinatively Unsaturated Metal Organic Frameworks: M-MOF-74 (M = Zn, Mg, Ni, Co), Chemistry of Materials **2017**, 29(10), pp. 4227-4235.

490. Mattson, E.C., Michalak, D.J., Veyan, J.F., Chabal, Y.J., Cobalt and iron segregation and nitride formation from nitrogen plasma treatment of CoFeB surfaces, Journal of Chemical Physics **2017**, 146(5),052805.

489. Abeykoon, N.C., Garcia, V., Jayawickramage, R.A., (...), Balkus, K.J., Ferraris, J.P., Novel binder-free electrode materials for supercapacitors utilizing high surface area carbon nanofibers derived from immiscible polymer blends of PBI/6FDA-DAM:DABA, RSC Advances **2017**, 7(34), pp. 20947-20959.

488. Nanayakkara, C.E., Vega, A., Liu, G., (...), Kanjolia, R.K., Chabal, Y.J., Role of Initial Precursor Chemisorption on Incubation Delay for Molybdenum Oxide Atomic Layer Deposition, Chemistry of Materials **2017**, 28(23), pp. 8591-8597.

487. T. Guo, S. Sampat, K. Zhang, J.A. Robinson, S.M. Rupich, Y. J. Chabal, Y.N. Gartstein, A.V. Malko, Order of magnitude enhancement of photoluminescence from monolayer MoS_2 due to near-field energy influx from nanocrystal films, *Sci. Rev.*, **2017**, 7, 41967.

486. Kerrigan, M. M.; Klesko, J. P.; Rupich, S. M.; Dezelah, C. L.; Kanjolia, R. K.; Chabal, Y. J.; Winter, C. H., Substrate Selectivity in the Low Temperature Atomic Layer Deposition of Cobalt Metal Films from Bis(1,4-Di-Tert-Butyl-1,3-Diazadienyl)Cobalt and Formic Acid. *The Journal of Chemical Physics* **2017,** *146*, 052813.

485. Perkins, C. K.; Mansergh, R. H.; Ramos, J. C.; Nanayakkara, C. E.; Park, D.-H.; Goberna-Ferrón, S.; Fullmer, L. B.; Arens, J. T.; Gutierrez-Higgins, M. T.; Jones, Y. R.; Lopez, J. I.; Rowe, T. M.; Whitehurst, D. M.; Nyman, M.; Chabal, Y. J.; Keszler, D. A., Low-Index, Smooth Al_2O_3 Films by Aqueous Solution Process. *Opt. Mater. Express* **2017,** *7*, 273-280.

2016

484. Chopra, T. P.; Longo, R. C.; Cho, K.; Chabal, Y. J., Ammonia Modification of Oxide-Free Si(111) Surfaces. *Surface Science* **2016,** *650*, 285-294.

483. Perkins, C. K.; Mansergh, R. H.; Park, D. H.; Nanayakkara, C. E.; Ramos, J. C.; Decker, S. R.; Huang, Y.; Chabal, Y. J.; Keszler, D. A., Aqueous Process to Limit Hydration of Thin-Film Inorganic Oxides. *Solid State Sciences* **2016,** *61*, 106-110.

482. Pena, L. F.; Nanayakkara, C. E.; Mallikarjunan, A.; Chandra, H.; Xiao, M. C.; Lei, X. J.; Pearlstein, R. M.; Derecskei-Kovacs, A.; Chabal, Y. J., Atomic Layer Deposition of Silicon Dioxide Using Aminosilanes Di-Sec-Butylaminosilane and Bis(Tert-Butylamino)Silane with Ozone. *Journal of Physical Chemistry C* **2016,** *120*, 10927-10935.

481. Longo, R. C.; Mattson, E. C.; Vega, A.; Cabrera, W.; Cho, K.; Chabal, Y.; Thissen, P., Atomic Mechanism of Arsenic Monolayer Doping on Oxide-Free Silicon(111). *MRS Advances* **2016,** *1*, 2345-2353.

480. Anand, B.; Sampat, S.; Danilov, E. O.; Peng, W. N.; Rupich, S. M.; Chabal, Y. J.; Gartstein, Y. N.; Malko, A. V., Broadband Transient Absorption Study of Photoexcitations in Lead Halide Perovskites: Towards a Multiband Picture. *Physical Review B* **2016,** *93*, 161205.

479. Zuluaga, S.; Fuentes-Fernandez, E. M. A.; Tan, K.; Arter, C. A.; Li, J.; Chabal, Y. J.; Thonhauser, T., Chemistry in Confined Spaces: Reactivity of the Zn-Mof-74 Channels. *Journal of Materials Chemistry A* **2016,** *4*, 13176-13182.

478. Zuluaga, S.; Fuentes-Fernandez, E. M. A.; Tan, K.; Li, J.; Chabal, Y. J.; Thonhauser, T., Cluster Assisted Water Dissociation Mechanism in Mof-74 and Controlling It Using Helium. *Journal of Materials Chemistry A* **2016,** *4*, 11524-11530.

477. Mattson, E. C.; Michalak, D. J.; Veyan, J. F.; Chabal, Y. J., Cobalt and Iron Segregation and Nitride Formation from Nitrogen Plasma Treatment of CoFeB Surfaces. *The Journal of Chemical Physics* **2017,** *146*, 052805.

476. Rupich, S. M.; Gartstein, Y. N.; Malko, A. V.; Chabal, Y. J., Controlled Deposition and Spectroscopic Signatures of Ordered Multilayer Nanocrystal Assemblies for Optoelectronic Applications. *Advanced Optical Materials* **2016,** *4*, 378-383.

475. Basnayake, S. A.; Tan, K.; Leonard, M.; Chabal, Y.; Balkus Jr, K. J., Encapsulation of Red Sulfur Chromophores in a Zeolitic Imidazolate Framework (Zif-8) Via Solvent Assisted Linker Exchange. *Microporous and Mesoporous Materials* **2016,** *219*, 172-177.

474. Calais, T.; Baijot, V.; Rouhani, M. D.; Gauchard, D.; Chabal, Y. J.; Rossi, C.; Esteve, A., General Strategy for the Design of DNA Coding Sequences Applied to Nanoparticle Assembly. *Langmuir* **2016,** *32*, 9676-9686.

473. Rudd, N. D.; Wang, H.; Fuentes-Fernandez, E. M. A.; Teat, S. J.; Chen, F.; Hall, G.; Chabal, Y. J.; Li, J., Highly Efficient Luminescent Metal-Organic Framework for the Simultaneous Detection and Removal of Heavy Metals from Water. *Acs Applied Materials & Interfaces* **2016,** *8*, 30294-30303.

472. Peng, W. N.; Anand, B.; Liu, L. H.; Sampat, S.; Bearden, B. E.; Malko, A. V.; Chabal, Y. J., Influence of Growth Temperature on Bulk and Surface Defects in Hybrid Lead Halide Perovskite Films. *Nanoscale* **2016,** *8*, 1627-1634.

471. Mattson, E. C.; Michalak, D. J.; Cabrera, W.; Veyan, J. F.; Chabal, Y. J., Initial Nitride Formation During Plasma-Nitridation of Cobalt Surfaces. *Applied Physics Letters* **2016,** *109*, 091602.

470. Longo, R. C.; Mattson, E. C.; Vega, A.; Cabrera, W.; Cho, K.; Chabal, Y. J.; Thissen, P., Mechanism of Arsenic Monolayer Doping of Oxide-Free Si(111). *Chemistry of Materials* **2016,** *28*, 1975-1979.

469. Zheng, Y.; Yang, D.-S.; Kweun, J. M.; Li, C.; Tan, K.; Kong, F.; Liang, C.; Chabal, Y. J.; Kim, Y. Y.; Cho, M.; Yu, J.-S.; Cho, K., Rational Design of Common Transition Metal-Nitrogen-Carbon Catalysts for Oxygen Reduction Reaction in Fuel Cells. *Nano Energy* **2016,** *30*, 443-449.

468. Nanayakkara, C. E.; Vega, A.; Liu, G.; Dezelah, C. L.; Kanjolia, R. K.; Chabal, Y. J., Role of Initial Precursor Chemisorption on Incubation Delay for Molybdenum Oxide Atomic Layer Deposition. *Chemistry of Materials* **2016,** *28*, 8591-8597.

467. Marin, L.; Warot-Fonrose, B.; Esteve, A.; Chabal, Y. J.; Rodriguez, L. A.; Rossi, C., Self-Organized Al2cu Nanocrystals at the Interface of Aluminum Based Reactive Nanolaminates to Lower Reaction Onset Temperature. *Acs Applied Materials & Interfaces* **2016,** *8*, 13104-13113.

466. Pluchery, O.; Caillard, L.; Rynder, A.; Rochet, F.; Zhang, Y.; Salmeron, M.; Chabal, Y. J., Single Charge Electronics with Gold Nanoparticles and Organic Monolayers. *MRS Proceedings* **2016,** *1817*.

465. Pluchery, O.; Zhang, Y.; Benbalagh, R.; Caillard, L.; Gallet, J. J.; Bournel, F.; Lamic-Humblot, A. F.; Salmeron, M.; Chabal, Y. J.; Rochet, F., Static and Dynamic Electronic Characterization of Organic Monolayers Grafted on a Silicon Surface. *Physical Chemistry Chemical Physics* **2016,** *18*, 3675-3684.

464. *Surface Etching, Chemical Modification and Characterization of Silicon Nitride and Silicon Oxide-Selective Functionalization of* Si_3N_4 *and* SiO_2, Liu, L. H.; Michalak, D. J.; Chopra, T. P.; Pujari, S. P.; Cabrera, W.; Dick, D.; Veyan, J. F.; Hourani, R.; Halls, M. D.; Zuilhof, H.; Chabal, Y. J., Journal of Physics-Condensed Matter **2016,** *28*, 094014.

463. *Toward Atomic-Scale Patterned Atomic Layer Deposition: Reactions of Al2o3 Precursors on a Si(001) Surface with Mixed Functionalizations,* Longo, R. C.; Owen, J. H. G.; McDonnell, S.; Dick, D.; Ballard, J. B.; Randall, J. N.; Wallace, R. M.; Chabal, Y. J.; Cho, K., Journal of Physical Chemistry C **2016,** *120*, 2628-2641.

462. *Toward Selective Ultra-High-Vacuum Atomic Layer Deposition of Metal Oxides on Si(100),* Dick, D.; Ballard, J. B.; Longo, R. C.; Randall, J. N.; Cho, K.; Chabal, Y. J., Journal of Physical Chemistry C **2016,** *120*, 24213-24223.

461. *Trapping Gases in Metal-Organic Frameworks with a Selective Surface Molecular Barrier Layer,* Tan, K.; Zuluaga, S.; Fuentes, E.; Mattson, E. C.; Veyan, J. F.; Wang, H.; Li, J.; Thonhauser, T.; Chabal, Y. J., *Nature Communications* **2016,** *7*, 13871.

460. *Understanding and Controlling Water Stability of Mof-74*, Zuluaga, S.; Fuentes-Fernandez, E. M. A.; Tan, K.; Xu, F.; Li, J.; Chabal, Y. J.; Thonhauser, T.,. Journal of Materials Chemistry A **2016,** *4*, 5176-5183.

2015

Proceedings:

3. *Surface Etching, Modification and Characterization of Silicon Nitride,* Chopra, T.P.**;** Liu, L.; Cabrera, W.; Dick, D.; Michalak, D.; Hourani, R.; Chabal, Y.J. SRC TECHCON Conference Proceedings 2015
4. *Single Charge Electronics with Gold Nanoparticles and Organic Monolayers,* O. Pluchery, L. Caillard, A. Rynder, F. Rochet, Y. Zhang, M. Salmeron and Y. J. Chabal (2016). Single Charge Electronics with Gold Nanoparticles and Organic Monolayers. MRS Proceedings, 1817, imrc2015abs032 doi:10.1557/opl.2016.40

Publications:

459. *Silicon surface modification and characterization for emergent photovoltaic applications based on energy transfer,* W. Peng, S.M. Rupich,, N. Shafiq, Y. N. Gartstein, A. V. Malko, and Y.J. Chabal, *Chemical Reviews*, 115(23), 12764 (2015)

458. *Low temperature synthesis of a TiO_2/Si heterojunction,* G. Sahasrabudhe, S. M. Rupich, J. Jhaveri, A. H. Berg, K. A. Nagamatsu, G. Man, Y. J. Chabal, A. Kahn, S. Wagner, J. C. Sturm, and J. Schwartz, *Journal of the American Chemical Society*, 137(47), 14842 (2015)

457. *Frustrated etching during H/Si(111) methoxylation produces fissured fluorinated surfaces whereas direct fluorination preserves atomically flat morphology,* E.S. Skibinski, W.J.I. DeBenedetti, S.M. Rupich, Y.J. Chabal, and M.A. Hines, *Journal of Physical Chemistry C*, 119(46), 26029 (2015)

456. *Role of alumina coatings for selective and controlled bonding of DNA on technologically relevant oxide surfaces,* T. Calais, B. Playe, J-M. Ducéré, J-F. Veyan, S. Rupich, A. Hemeryck, M. D. Rouhani, C. Rossi, Y. J. Chabal, and A. Estève, *Journal of Physical Chemistry C*, 119(41), 23527 (2015)

455. *Ethylenediamine grafting on oxide-free H-, 1/3ML F-, and Cl-terminated Si(111) surfaces,* T.P. Chopra, R.C. Longo, K. Cho, M. D. Halls, P. Thissen, P. Thissen, and Y.J. Chabal, *Chemistry of Materials*, 27(18), 6268 (2015)

454. *Atomic Layer Deposition of Cobalt silicide thin films studied by in situ infrared spectroscopy,* K. Bernal-Ramos, M.J. Saly, R.K. Kanjolia, and Y.J. Chabal, *Chemistry of Materials*, 27(14), 4943 (2015)

453. *Enhancing the reactivity of Al/CuO nanolaminates by Cu incorporation at the interfaces,* L. Marin, C.E. Nanayakkara, J-F. Veyan, B. Warot-Fonrose, S. Joulie, A. Estève, C. Tenailleau, Y. J. Chabal, and C. Rossi, *ACS Applied Materials and Interfaces*, 7(22), 11713 (2015)

452. *Competitive Co-adsorption of CO_2 with H_2O, NH_3, SO_2, NO, NO_2, N_2, O_2, CH_4 in M-MOF-74 (M= Mg, Co, Ni): The Role of Hydrogen Bonding*, K. Tan, S. Zuluaga, Q. Gong, Y. Gao, N. Nijem, J. Li, T. Thonhauser and Y. J. Chabal, *Chemistry of Materials*, 27 (6), 2203 (2015)**.**

451. *Controlling the reproducibility of Coulomb blockade phenomena for gold nanoparticles on an organic monolayer/silicon system,* L. Caillard, S. Sattayaporn, A-F. Lamic-Humblot, S. Casale, P. Campbell, Y. J. Chabal and O. Pluchery, *Nanotechnology,* 26, 065301 (2015).

450. *Hybrid light sensor based on ultrathin Si nanomembranes sensitized with CdSe/ZnS colloidal nanocrystal quantum dots*, W. Peng, S. Sampat, S. M. Rupich, B. Anand, H. M. Nguyen, D. Taylor, B. E. Beardon, Y. N. Gartstein, Y. J. Chabal and A. V. Malko, *Nanoscale*, 7, 8524 (2015)

449. *Structural, elastic, thermal, and electronic responses of small-molecule-loaded metal-organic framework materials*, P. Canepa, K. Tan, Y. Du, H. Lu, Y. J. Chabal and T. Thonhauser, *Journal of Materials Chemistry A*, 3, 986 (2015)

448. Structural band-gap tuning in g-C_3N_4, S. Zuluaga, L-H. Liu, N. Shafiq, S. M. Rupich, J-F. Veyan, Y. J. Chabal and T. Thonhauser, Physical Chemistry Chemical Physics, 17, 957 (2015)

447. *Water Interaction in Metal Organic Frameworks,* K. Tan, N. Nijem, Y. Gao, S. Zuluaga, J. Li, T. Thonhauser and Y. J. Chabal, *CrystEngComm* 17, 247 (2015).

446. *Morphology and chemical termination of HF-etched Si_3N_4 surfaces,* L-H Liu, W. J. I. Debenedetti, T. Peixoto, S. Gokalp, N. Shafiq, J-F Veyan, D. J. Michalak, R. Hourani and Yves J. Chabal, *Applied Physics Letters*, 105, 261603 (2014)

445. *Chemical nature and control of high-k dielectric/III-V interfaces,* W. Cabrera, M.D. Halls, and Y.J. Chabal, *ECS Transactions*, 66(6), 65, (2015)

444. *Sensing the charge state of single gold nanoparticles via work function measurements*, Y. Zhang, O. Pluchery, L. Caillard, A-F. Lamic-Humblot, S. Casale, Y. J. Chabal, and M. Salmeron, *Nano Letters* 15(1), 51, **(**2015)

443. *Nanopatterning on H-Terminated Si(111) explained as dynamic equilibrium of the chemical reaction with methanol*, P. Thissen, E. Fuchs, K. Roodenko, T. Peixoto, B. Batchelor, D. Smith, W. G. Schmidt, and Yves Chabal, *Journal of Physical Chemistry C*, 119(29), 16947, **(**2015)

442. *Highly active 'polytype-birnessite' MnO_x water oxidation catalyst formed in-situ from $Mn^{II}_4O_4$ MOF precursor: Structural investigation of an amorphous catalyst*, B. J. Deibert, J. M. Zhang, P. F. Smith, K. W. Chapman, S. Rangan, D. Banerjee, K. Tan, H. Wang, N. Pasquale, F. Chen, K. B. Lee, G. C. Dismukes, Y. J. Chabal, and J. Li, Chem. Eur. J. **21**, 13218 (2015).

2014

441. *Elementary surface chemistry during CuO/Al nanolaminate-thermite synthesis: copper and oxygen deposition on aluminum (111) surfaces*, C. Lanthony , M.Guiltat , J.M. Ducere , A. Verdier, A. Hemeryck , M. Djafari Rouhani , C Rossi, Y. J. Chabal and A. Esteve, *ACS Applied Materials & Interfaces* 6**,** 15086 (2014)

440. *Effective Sensing of RDX via Instant and Selective Detection of Ketone Vapors*, Zhichao Hu, Kui Tan, Hao Wang, Yonggang Zhao, Chong Zheng, Debasis Banerjee, Qihan Gong, Thomas J. Emge, Yves J. Chabal, and Jing Li, Chemical Science 5, 4873 (2014)

439. *Role of Interfacial Aluminum Silicate and Silicon as Barrier Layers for Atomic Layer Deposition of Al_2O_3 Films on Chemically Cleaned InP(100) Surfaces,* W. Cabrera, M. Halls, I. Povey, Y. J. Chabal, Journal of Physical Chemistry C, 118, 29164 (2014)

438. *Effect of metal/bulk-heterojunction interfacial properties on organic photovoltaic device performance*, J. Wang, C. R. Friedman, W. Cabrera, K. Tan, Y. J. Lee, Y. J. Chabal, J. W. P. Hsu, Journal Material Chemistry A, 2, 15288 (2014)

437. *Spectroscopic evaluation of out-of-plane surface vibration bands from surface functionalization of graphite oxide by fluorination,* Muge Acik, Sriram Yagneswaran, Weina Peng, Geunsik Lee, Benjamin R. Lund, Dennis W. Smith Jr., Yves J. Chabal, Carbon 77, 577 (2014).

436. *Morphology and Chemical Termination of HF-Etched Si3N4 Surfaces*, L.-H. Liu, W. Debenedetti, T. Peixoto, S. Karakaya, N. Shafiq, J.-F. Veyan, D. Michalak, R. Hourani, and Y. J. Chabal, Applied Physics Letters 105, 261603 (2014)

435. *Water Interaction in Metal Organic Framework,* K. Tan, N. Nijem, Y. Gao, S. Zuluaga, J. Li, T. Thonhauser and Y. J. Chabal. CrystEngComm 17, 247 (2015)

434. *Water Reaction Mechanism in Metal Organic Frameworks with Coordinatively Unsaturated Metal Ions: MOF-74, Chemistry of Materials*, K. Tan, S. Zuluaga, Q. Gong, J. Li, T. Thonhauser and Y. J. Chabal, Chemistry of Materials 26, 6886 (2014)

433. *Adsorbate interactions in Metal Organic Frameworks studied by vibrational spectroscopy,* N. Nijem and Y.J. Chabal, Comments on Inorganic Chemistry 34, 78 (2014).

432. *Graphitic Carbon Nitride Nano-Emitters on Silicon: a Photoelectrochemical Heterojunction Composed of Earth-Abundant Materials for Enhanced Evolution of Hydrogen,* M. Lublow , A. Fischer, C. Merschjann, F. Yang, Th. Schedel-Niedrig, J.-F. Veyan, and Y. J. Chabal, Journal of Materials Chemistry A 2, 12697 (2014).

431. *Efficient Directed Energy Transfer through Size-Gradient Nanocrystal Layers into Silicon Substrates*, William J. I. De Benedetti , Michael T. Nimmo , Sara M. Rupich , Louis M. Caillard, Yuri N. Gartstein , Yves J. Chabal and Anton V. Malko, Advanced Functional Materials 24, 5002 (2014).

430. *Lowering the Density of Electronic Defects on Organic-Functionalized Si(100) Surfaces,* Weina Peng, William J.I. DeBenedetti, Seonjae Kim, Melissa A. Hines and Yves J. Chabal, Applied Physics Letters 104, 241601 (2014).

439.. *Chemical bonding and stability of multilayer graphene oxide layers,* Cheng Gong, Suenne Kim, Si Zhou, Yike Hu, Muge Acik, Walt de Heer, Claire Berger, Angelo Bongiorno, Eliso Riedo, Yves Chabal, Proc. SPIE 8987, Oxide-based Materials and Devices V, 89872C (2014).

428. *Ab initio study of H2 dissociation and desorption on Si(001) and Ge(001)-(2x1) surfaces, R. C. Longo, J. H. G. Owen, J. B. Ballard, R. M. Wallace, J. N. Randall, Y. J. Chabal and K. Cho,* Journal of Physical Chemistry C **118**, 10088 (2014).

427. *Pattern transfer of hydrogen depassivation lithography patterns into silicon with atomically traceable placement and size control,* Joshua B. Ballard, James H. G. Owen, William Owen, Justin R. Alexander, Ehud Fuchs, John N. Randall, James R. Von Ehr, Stephen McDonnell, Don D. Dick, Robert M. Wallace, Yves J. Chabal, Maia R. Bischof, David L. Jaeger, Richard F. Reidy, Joseph Fu,

Pradeep Namboodiri, Kai Li, and Richard M. Silver, Journal of Vacuum Science and Technology B32(4), 041804 (2014).

426. *Film structure of epitaxial graphene oxide on SiC: Insight on the relationship between interlayer spacing, water content, and intralayer structure,* S. Zhou, S. Kim, E. Di Gennaro, Y. Hu, C. Gong, C.-Y. Chang, X. Lu, H.-C. Chiu, C. Berger, W. de Heer, E. Riedo, Y.J. Chabal, C. Aruta, and A. Bongiorno, Advanced Materials Interfaces 1, 1300106 (2014).

425. *Silicon interfacial passivation layer chemistry for high-k /InP interfaces,* H. Dong, W. Cabrera, X. Qin, B. Brennan, D. Zhernokletov, C.L. Hinkle, J. Kim, Y.J. Chabal, R.M. Wallace, ACS Appl. Mat. & Int. 6 (10), 7340 (2014).

424. *Study of van der Waals bonding and interactions in metal organic framework materials,* S. Zuluaga, P. Canepa, K. Tan, Y.J. Chabal, T. Thonhauser, J. Phys. Cond. Mat. 26 (13), 133002 (2014).

423. *Synthesis, characterization, and photocatalytic activity of Y-doped CeO_2 nanorods,* A. D. Liyanage, S.D. Perera, K. Tan, Y. J. Chabal, K.J. Balkus, Jr., ACS Catalysis 4 (2), 577 (2014).

422. *Surface Oxide Characterization and Interface Evolution in Atomic Layer Deposition of Al_2O_3 on InP(100) studied by in-situ Infrared Spectroscopy*, W. Cabrera, M.D. Halls, I. M. Povey, Y. J. Chabal, J. Phys. Chem. C. 118 (11), 5862 (2014).

421. *Selectivity of metal oxide atomic layer deposition on hydrogen terminated and oxidized Si(001)-(2x1) surface*, R. C. Longo, S. McDonnell, D. Dick, R. M. Wallace, Y. J. Chabal J. H. G. Owen, J. B. Ballard, J. N. Randall and K. Cho; Journal of Vacuum Science & Technology B 32, 03D112 (2014).

420. *Realistic Metal-Graphene Contact Structures*, C. Gong, S. McDonnell, X. Qin, A. Azcatl, H. Dong, Y. J. Chabal, K. Cho, R. M. Wallace, ACS Nano 8 (1), 642 (2014).

419. *Diffusion of In0.53Ga0.47As elements through hafnium oxide during post deposition annealing*, W. Cabrera, B. Brennan, H. Dong, T. P. O'Regan, I. M. Povey, S. Monaghan, É. O'Connor, P.K. Hurley, R. M. Wallace, and Y. J. Chabal, Appl. Phys. Lett. 104 (1), 011601 (2014).

418. *Digermane Deposition on Si(100) and Ge(100): from Adsorption Mechanism to Epitaxial Growth*, Don Dick, Jean-Francois Veyan, R. C. Longo, Stephen McDonnell, Josh B. Ballard, Xiaoye Qin, Hong Dong, James H. G. Owen, John N. Randall, Robert M. Wallace, Kyeongjae Cho, and Yves J. Chabal, Journal of Physical Chemistry C 118 (1), 482 (2014).

2013

417. *In situ study of e-beam Al and Hf metal deposition on native oxide InP (100)*, H. Dong, Santosh KC, A. Azcatl, W. Cabrera, X. Qin, B. Brennan, D. Zhernokletov, Y.J. Chabal, K. Cho and R. M. Wallace, J. Appl. Phys. 114 (20), 203505 (2013).

416. *Metal Contacts on Physical Vapor Deposited Monolayer MoS_2,* C. Gong, C. Huang, J. Miller, L. Cheng, Y. Hao, J. Kim, R. Ruoff, R. M. Wallace, K. Cho, X. Xu, and Y. J. Chabal, ACS Nano, **7**(12), 11350-11357 (2013).

415. *Selective adsorption of SO_2 into microporous paddlewheel frameworks*, K. Tan, P. Canepa, Q. Gong, J. Liu, D. H. Johnson, A. Dyevoich, P. Thallapally, T. Thonhauser, J. Li, and Y. J. Chabal, Chem. Mat. 25(23), 4653-4662 (2013).

414. *Comparison of neat and photo-crosslinked polyvinylidene fluoride-co-hexafluoropropylene thin film dielectrics formed by spin coating,* O.K. Iyore, K. Roodenko, P.S. Winkler, J.R. Noriega, J.J. Vasselli, Y.J. Chabal, B.E. Gnade, Thin Solid Films 548, 597-602 (2013).

413. *Atomically-precise three-dimensional top down fabrication,* J.B. Ballard, J.H.G. Owen, E. Fuchs, S. McDonnell, D. Dick, G. Mordi, A. Azcati, R.M. Wallace, J. Kim, Y.J. Chabal, J.N. Randall, Transducers and Eurosensors, 6626878, 764-767 (2013).

412. *Precursor Design and Reaction Mechanisms for the Atomic Layer Deposition of Metal Films,* Karla Bernal Ramos, Mark J. Saly and Yves J. Chabal, Coordination Chemistry Reviews 257, 3271–3281 (2013).

411. *Rapid Selective Etching of PMMA Residues from Transferred Graphene by Carbon Dioxide*, C. Gong, H. C. Floresca, D. Hinojos, S. McDonnell, X. Qin, Y. Hao, S. Jandhyala, G. Mordi, J. Kim, L. Colombo, R. S. Ruoff, M. Kim, K. Cho, R. M. Wallace, and Yves J. Chabal, J. Phys. Chem. C, **117**(44), 23000-23008 (2013).

410. *Examining the interlayer interactions formed between reduced graphene oxide and ionic liquids*, N. Shafiq, M. Acik,, D.R. Dreyer, J. Juarez, C. W. Bielawski, and Y. J. Chabal, MRS Communications, **3** (01), 67 (2013).

409. *Controlling the atomic layer deposition of titanium dioxide on silicon: Dependence on surface termination,* McDonnell, S., Longo, R.C., Seitz, O., Ballard, J.B., Mordi, G., Dick, D., Owen, J.H.G., Randall, J.N., Kim, J., Chabal, Y.J., Cho, K., Wallace, R.M., Journal of Physical Chemistry C, 117 (39), 20250-20259 (2013).

408. *Anisotropic Optical Properties of Thin-Film Thiacarbocyanine Dye Aggregates*, K. Roodenko, H. Nguyen, L. Caillard, A. Radja, P. Thissen, J. Gordon, Y. Gartstein, A. Malko, Y.J. Chabal, J. Phys. Chem. C 117 (39), 20186-20192 (2013).

407. *Selective, sensitive and reversible detection of vapor-phase high explosives via two-dimensional mapping: a new strategy for MOF-based sensors,* Z. Hu, S. Pramanik, K. Tan, C. Zheng, W. Liu, X. Zhang, Y.J. Chabal, J. Li, Crystal Growth and Design 13 (10), 4204-4207 (2013).

406. *Interfacial graphene growth in the Ni/SiO_2 system using pulsed laser deposition,* G.K. Hemani, W.G. Vandenberghe, B. Brennan, Y.J. Chabal, A.V. Walker, R.M. Wallace, M. Quevedo-Lopez, M.V. Fischetti, Appl. Phys. Lett. 103 (13), 134102 (2013).

405. *Functionalization of oxide-free silicon surfaces*, William J.I. DeBenedetti and Yves J. Chabal, Journal of Vacuum Science & Technology A, 31, 050826 (2013).

404. *Manganese oxide nanorod-graphene/vanadium oxide nanowire-graphene binder-free paper electrodes for metal oxide hybrid supercapacitors,* S. D. Perera, M. Rudolph, R.G. Mariano, N. Nijem, J. P. Ferraris, Y. J. Chabal, and K. J. Balkus Jr, Nano Energy 2 (5), 966-975 (2013).

403. *Water Cluster Confinement and Methane Adsorption in the Hydrophobic Cavities of a Fluorinated Metal-Organic Framework*, N. Nijem, P. Canepa, U. Kaipa, K. Tan, K. Roodenko, S. Tekarli, J. Halbert, I. W. H. Oswald, R. K. Arvapally, C. Yang, T. Thonhauser, M. A. Omary, and Y. J. Chabal, J. Am. Chem. Soc. 135 (34), 12615-12626 (2013).

402. *Patterned Atomic Layer Deposition on Scanning Tunneling Microscope constructed templates*, J. Ballard, S. McDonnell, D. Dick, J. Owen, G. Mordi, A. Azcatl, P. Campbell, Y.J. Chabal, J. Randall, R.M. Wallace, NSTI-Nanotech 2, 481-484 (2013).

401. *Atomic layer deposition of HfO_2 on III-V semiconductors- an interfacial chemistry perspective,* W. Cabrera, H. Dong, B. Brennan, É. O'Connor, P. Carolan, R. Galatage, S. Monaghan, I. Povey, P. K. Hurley, C.L. Hinkle, Y.J. Chabal, and R.M. Wallace, NSTI-Nanotech 2, 1-4 (2013).

400. *Indium diffusion through high-k dielectrics in high-k/InP stacks,* H. Dong, W. Cabrera, K.C. Santosh, B. Brennan, X. Qin, S. McDonnell, D. Zhernokletov, C. L. Hinkle, K. Cho, Y. J. Chabal, and R. M. Wallace, Appl. Phys. Lett. 103 (6), 061601 (2013).

399. *Monolayer doping via phosphonic acid grafting on silicon: microscopic insight from infrared spectroscopy and density functional theory calculations*, R.C. Longo, K. Cho, W.G. Schmidt, Y.J. Chabal, P. Thissen, Adv. Funct. Mat. 23 (27), 3471-3477 (2013).

398. *In situ Infrared Spectroscopic Study of Atomic Layer Deposited TiO_2 Thin Films by Non-Aqueous Routes*", K. Bernal Ramos, G. Clavel, C. Marichy, W. Cabrera, N. Pinna, Y. J. Chabal, Chem. Mater. 25 (9), 1706–1712 (2013).

397. *Visible to Near-Infrared Sensitization of Silicon Substrates via Energy Transfer from Proximal Nanocrystals: Further Insights for Hybrid Photovoltaics*, M.T. Nimmo, L.M. Caillard, W. De Benedetti, H.M. Nguyen, O. Seitz, Y.N. Gartstein, Y.J. Chabal, A.V. Malko, ACS Nano 7 (4), 3236-3245 (2013).

396. *Gold Nanoparticles on Oxide-Free Silicon-Molecule Interface for Single Electron Transport,* L. Caillard, O. Seitz, P.M. Campbell, R.P. Doherty, A.-F. Lamic-Humblot, E. Lacaze, Y.J. Chabal, O. Pluchery, Langmuir 29 (16), 5066-5073 (2013).

395. *Selective detection of olefins using a luminescent silver-functionalized metal organic framework, RPM3*, A.M. Marti, N. Nijem, Y.J. Chabal, K.J. Balkus, Microporous and Mesoporous Mat. 174, 100-107 (2013).

394. *Ligand Functionalization and Its Effect on CO2 Adsorption in Microporous Metal-Organic Frameworks,* L. Liu, Y. Zhao, Z. Zhang, N. Nijem, Y.J. Chabal, X. Peng, H. Zheng, J. Li, Chemistry – An Asian Journal 8 (4), 778-785 (2013).

393. *When metal organic frameworks turn into linear magnets*, P. Canepa, Y.J. Chabal, T. Thonhauser, Phys. Rev. B. 87 (9), 094407 (2013).

392. *Interfacial Chemistry in Al/CuO Reactive Nanomaterial and Its Role in Exothermic Reaction*, J. Kwon, J.-M. Ducere, P. Alphonse, M. Bahrami, M. Petrantoni, J.-F. Veyan, C. Tenailleau, A. Estève, C. Rossi, Y. J. Chabal, ACS Appl. Mat. & Interf. 5 (3), 605-613 (2013).

391. *Mechanism of Carbon Dioxide Adsorption in a Highly Selective Coordination Network Supported by Direct Structural Evidence*, A.M. Plonka, D. Banerjee, W.R. Woerner, Z. Zhang, N. Nijem, Y.J. Chabal, J. Li, J.B. Parise, Angew. Chem.- Int. Ed. 52 (6), 1692-1695 (2013

390. *Vanadium oxide nanowire-Graphene binder free nanocomposite paper electrodes for supercapacitors: A facile green approach*, S. D. Perera, A. D. Liyanage, N. Nijem, J. P. Ferraris, Y. J. Chabal, and K. J. Balkus Jr, Journal of Power Sources **230**, 130 (2013).

389. *Diffusion of small molecules in metal organic framework materials*, P. Canepa, N. Nijem, Y. J. Chabal, and T. Thonhauser, Physical Review Letters **110** (2), 026102 (2013).

388. *Recovery of nonwetting characteristics by surface modification of gallium-based liquid metal droplets using hydrochloric acid vapor*, D. Kim, P. Thissen, G. Viner, D. W. Lee, W. Choi, Y. J. Chabal, and J. B. Lee, ACS Applied Materials and Interfaces **5** (1), 179 (2013).

387. *Chemical Stability and Reactivity of HF Etched Silicon Nitride Surfaces*, T. Peixoto, W.J. DeBenedetti,

S. Karakaya, K.B. Ramos, Y.J. Chabal, Proceedings of the SRC TECHCON Conference, September 9-10, 2013.

386. *A High Vacuum Fracture Facility for Molecular Interactions,* K. M. Liechti, S. R. Na, M. Wakamatsu, O. Seitz, and Y. Chabal, Experimental Mechanics **53**, 231 (2013).

2012

385. *Stability and Hydrolyzation of Metal Organic Frameworks with Paddle-Wheel SBUs upon Hydration*, K. Tan, N. Nijem, P. Canepa, Q. Gong, J. Li, T. Thonhauser, and Y. J. Chabal, Chemistry of Materials **24** (16), 3153 (2012).

384. *Reconstructed ribbon edges in thermally reduced graphene nanoribbons*, M. Acik, J. Carretero-González, E. Castillo-Martínez, D. M. Rogers, R. Guzman, R. H. Baughman, and Y. J. Chabal, Journal of Physical Chemistry C **116** (45), 24006 (2012).

383. *Impact of ionic liquids on the exfoliation of graphite oxide*, M. Acik, D. R. Dreyer, C. W. Bielawski, and Y. J. Chabal, Journal of Physical Chemistry C **116** (14), 7867 (2012).

382. *Progression of solid electrolyte interphase formation on hydrogenated amorphous silicon anodes for lithium-ion batteries*, D. E. Arreaga-Salas, A. K. Sra, K. Roodenko, Y. J. Chabal, and C. L. Hinkle, Journal of Physical Chemistry C **116** (16), 9072 (2012).

381. *Formation of Organic Monolayers Through Wet Chemistry,* D. Aureau, Chabal, Y.J., in *Functionalization of Semiconductor Surfaces*, edited by Steven L. Bernasek Franklin Tao (John Wiley and Sons, USA, 2012), pp. 301.

380. *Exfoliated graphite nanoplatelets-V_2O_5 nanotube composite electrodes for supercapacitors*, J. S. Bonso, A. Rahy, S. D. Perera, N. Nour, O. Seitz, Y. J. Chabal, K. J. Balkus Jr, J. P. Ferraris, and D. J. Yang, Journal of Power Sources **203**, 227 (2012).

379. *Oriented graphene nanoribbon yarn and sheet from aligned multi-walled carbon nanotube sheets*, J. Carretero-González, E. Castillo-Martínez, M. Dias-Lima, M. Acik, D. M. Rogers, J. Sovich, C. S. Haines, X. Leprõ, M. Kozlov, A. Zhakidov, Y. Chabal, and R. H. Baughman, Advanced Materials **24** (42), 5695 (2012).

378. *Effect of back-gate biasing on floating electrolytes in silicon-on-insulator-based nanoribbon sensors*, P. G. Fernandes, R. A. Chapman, O. Seitz, H. J. Stiegler, H. C. Wen, Y. J. Chabal, and E. M. Vogel, IEEE Electron Device Letters **33** (3), 447 (2012).

377. *Graphitization of graphene oxide with ethanol during thermal reduction*, C. Gong, M. Acik, R. M. Abolfath, Y. Chabal, and K. Cho, Journal of Physical Chemistry C **116** (18), 9969 (2012).

376. *Metal-graphene-metal sandwich contacts for enhanced interface bonding and work function control*, C. Gong, D. Hinojos, W. Wang, N. Nijem, B. Shan, R. M. Wallace, K. Cho, and Y. J. Chabal, ACS Nano **6** (6), 5381 (2012).

375. *Atomic layer deposition of dielectrics on graphene using reversibly physisorbed ozone*, S. Jandhyala, G. Mordi, B. Lee, G. Lee, C. Floresca, P. R. Cha, J. Ahn, R. M. Wallace, Y. J. Chabal, M. J. Kim, L. Colombo, K. Cho, and J. Kim, ACS Nano **6** (3), 2722 (2012).

374. *Investigation of $LiAlH_4$-THF formation by direct hydrogenation of catalyzed Al and LiH*, D. Lacina, L. Yang, I. Chopra, J. Muckerman, Y. Chabal, and J. Graetz, Physical Chemistry Chemical Physics **14** (18), 6569 (2012).

373. *A High Vacuum Fracture Facility for Molecular Interactions*, K. M. Liechti, S. R. Na, M. Wakamatsu, O. Seitz, and Y. Chabal, Experimental Mechanics, 1 (2012).

372. *Colored porous silicon as support for plasmonic nanoparticles*, M. Lublow, S. Kubala, J. F. Veyan, and Y. J. Chabal, Journal of Applied Physics **111** (8) (2012).

371. *Efficient radiative and nonradiative energy transfer from proximal CdSe/ZnS nanocrystals into silicon nanomembranes*, H. M. Nguyen, O. Seitz, W. Peng, Y. N. Gartstein, Y. J. Chabal, and A. V. Malko, ACS Nano **6** (6), 5574 (2012).

370. *Spectroscopic characterization of van der Waals interactions in a metal organic framework with unsaturated metal centers: MOF-74-Mg*, N. Nijem, P. Canepa, L. Kong, H. Wu, J. Li, T. Thonhauser, and Y. J. Chabal, Journal of Physics Condensed Matter **24** (42), 424203 (2012).

369. *Tuning the gate opening pressure of Metal-Organic Frameworks (MOFs) for the selective separation of hydrocarbons*, N. Nijem, H. Wu, P. Canepa, A. Marti, K. J. Balkus, T. Thonhauser, J. Li, and Y. J. Chabal, Journal of the American Chemical Society **134** (37), 15201 (2012).

368. *Probing the intrinsic electrical properties of thin organic layers/semiconductor interfaces using an atomic-layer-deposited Al_2O_3 protective layer*, W. Peng, O. Seitz, R. A. Chapman, E. M. Vogel, and Y. J. Chabal, Applied Physics Letters **101** (5), 051605 (2012).

367. *Alkaline deoxygenated graphene oxide for supercapacitor applications: An effective green alternative for chemically reduced graphene*, S. D. Perera, R. G. Mariano, N. Nijem, Y. Chabal, J. P. Ferraris, and K. J. Balkus Jr, Journal of Power Sources **215**, 1 (2012).

366. *Hydrothermal synthesis of graphene-TiO_2 nanotube composites with enhanced photocatalytic activity*, S. D. Perera, R. G. Mariano, K. Vu, N. Nour, O. Seitz, Y. Chabal, and K. J. Balkus, ACS Catalysis **2** (6), 949 (2012).

365. *Characterization of Ru thin-film conductivity upon atomic layer deposition on H-passivated Si(111)*, K. Roodenko, S. K. Park, J. Kwon, L. Wielunski, and Y. J. Chabal, Journal of Applied Physics **112** (11), 113517 (2012).

364. *Probing the catalytic activity of porous graphene oxide and the origin of this behaviour*, C. Su, M. Acik, K. Takai, J. Lu, S. J. Hao, Y. Zheng, P. Wu, Q. Bao, T. Enoki, Y. J. Chabal, and K. P. Loh, Nature Communications **3**, 2315 (2012).

363. *Activation of surface hydroxyl groups by modification of H-terminated Si(111) surfaces*, P. Thissen, T. Peixoto, R. C. Longo, W. Peng, W. G. Schmidt, K. Cho, and Y. J. Chabal, Journal of the American Chemical Society **134** (21), 8869 (2012).

362. *Wet chemical surface functionalization of oxide-free silicon*, P. Thissen, O. Seitz, and Y. J. Chabal, Progress in Surface Science **87** (9-12), 272 (2012).

361. *pH-dependent structure and energetics of H_2O/MgO(100)*, P. Thissen, V. Thissen, S. Wippermann, Y. J. Chabal, G. Grundmeier, and W. G. Schmidt, Surface Science **606** (11-12), 902 (2012).

360. *Controlled, low-coverage metal oxide activation of silicon for organic functionalization: Unraveling the phosphonate bond*, P. Thissen, A. Vega, T. Peixoto, and Y. J. Chabal, Langmuir **28** (50), 17494 (2012).

359. *Environment-controlled tethering by aggregation and growth of phosphonic acid monolayers on silicon oxide*, A. Vega, P. Thissen, and Y. J. Chabal, Langmuir **28** (21), 8046 (2012).

358. *Room Temperature Metastability of Multilayer Graphene Oxide Films*, Suenne Kim, Si Zhou, Yike Hu, Muge Acik, Yves J. Chabal, Claire Berger, Walt de Heer, Angelo Bongiorno, and Elisa Riedo, Nature Materials 11 (6): 544 (2012)

357. *Analyzing the frequency shift of physi-absorbed CO2 in metal organic framework materials*, Y. Yao, N. Nijem, J. Li, Y. J. Chabal, D. C. Langreth, and T. Thonhauser, Physical Review **B** 85, 064302 (2012).

356. *Towards modelling the vibrational signatures of functionalized surfaces: carboxylic acids on H-Si(111) surfaces*, C. G. T. Feugmo, B. Champagne, Y. Caudano, F. Cecchet, Y. J. Chabal, and V. Liegeois, Journal of Physics: Condensed Matter **24**, 124111 (2012).

355. *Structure Matters: Correlating temperature dependent electrical transport through alkyl monolayers with vibrational and photoelectron spectroscopies*, H. Shpaisman, O. Seitz, O. Yaffe, K. Roodenko, L. Scheres, H. Zuilhof, Y. J. Chabal, T. Sueyoshi, S. Kera, N. Ueno, A. Vilan, and D. Cahen, Chemical Science **3**, 851 (2012).

354. *Optimizing non-radiative energy transfer in hybrid colloidal-nanocrystal/silicon structures by controlled nanopillar architectures for future photovoltaic cells*, O. Seitz, L. Caillard, H. M. Nguyen, C. Chiles, Y. J. Chabal, and A. V. Malko, Applied Physics Letters **100**, 021902 (2012).

353. *Surface Reactions of μ^2-η^2-(^{t}Bu-acetylene)dicobalthexacarbonyl with Oxidized and H-terminated Si(111) Surfaces,* J. Kwon, M. Saly, M. D. Halls, R. K. Kanjolia, and Y. J. Chabal, Chemistry of Materials, *23* (8), pp 2068–2074 (2011).

352. *Enhanced Binding Affinity, Remarkable Selectivity and High Capacity of CO2 in a New rht-Type Metal-Organic Framework Based on Hexacarboxylate Ligand with N-rich Imino Triazine Backbone*, B. Li, Z. Zhang, Y. Li, K. Yao, Y. Zhu, Z. Deng, F. Yang, X. Zhou, G. Li, H. Wu, Z. Shi, S. Feng, N. Nijem, Y. J. Chabal, J. Li, Z. Lai, and Y. Han, Angewandte Chemie International Edition **51**, 1412 (2012).

2011

351. *Exfoliated graphite nanoplatelets-V2O5 nanotube composite electrodes for supercapacitors*, J. S. Bonso, A. Rahy, S. D. Perera, N. Nour, O. Seitz, Y. J. Chabal, K. J. Balkus Jr, J. P. Ferraris, and D. J. Yang, Journal of Power Sources **203**, 227 (2011).

350. *Study of inter-adsorbate interactions in graphite stacks for graphene nano-electronics*, M. Acik, J. Juarez, and Y. J. Chabal, SRC Techcon proceedings (2011).

349. *Characterization of Semiconductor Surfaces during Surface Conditioning and Functionalization*, Y. J. Chabal, O. Seitz, D. Aureau, P. Thissen, and T. Peixoto, ECS Transactions **41** (5), 303 (2011).

348. *Infrared analysis of biomolecule attachment of functionalized silicon surfaces,* N. A. Lapin, O. Seitz, and Y. J. Chabal, in *Biointerface characterization by advanced IR spectroscopy*, edited by C. M. Pradier and Yves J. Chabal (Elsevier, Oxford, UK, 2011), 83.

347. *Raman spectroscopy for probing guest-host interactions in metal organic frameworks*, N. Nijem, K. Roodenko, Y. Zhao, J. Li, and Y. J. Chabal, Materials Research Society Symposium Proceedings **1334** (Recent Developments in Materials for Hydrogen Storage and Carbon-Capture Technologies), DOI 10.1557/opl.2011.1311 (2011).

346. *Enhancing Gas Adsorption and Separation Capacity through Ligand Functionalization of Microporous Metal-Organic Framework Structures*, Y. Zhao, H. Wu, T. J. Emge, Q. Gong, N. Nijem, Y. J. Chabal, L. Kong, D. C. Langreth, H. Liu, H. Zeng, and J. Li, Chemistry--A European Journal **17** (18), 5101 (2011).

345. *Field Emission from Atomically Thin Edges of Reduced Graphene Oxide*, H. Yamaguchi, K. Murakami, G. Eda, T. Fujita, P. Guan, W. Wang, C. Gong, J. Boisse, S. Miller, M. Acik, K. Cho, Y. J. Chabal, M. Chen, F. Wakaya, M. Takai, and M. Chhowalla, ACS Nano **5** (6), 4945 (2011).

344. *Si_2H_6 Dissociative Chemisorption and Dissociation on Si(100)-(2x1) and Ge(100)-(2x1)*, J.-F. Veyan, H. Choi, M. Huang, R. C. Longo Pazos, J. B. Ballard, S. McDonnell, M. P. Nadesalingam, H. Dong, I. S. Chopra, J. H. G. Owen, W. P. Kirk, J. Randall, R. M. Wallace, K. Cho, and Y. J. Chabal, The Journal of Physical Chemistry C **115**, 24534 (2011).

343. S. Sioncke, Y. J. Chabal, and M. M. Frank, Germanium Surface Conditioning in *Handbook of Cleaning for Semiconductor Manufacturing: Fundamentals and Applications*, edited by Karen A. Reinhardt and Richard F. Reidy (Scrivener Publishing and John Wiley and Sons, 2011), 429.

342. *Control and stability of self-assembled monolayers under biosensing conditions*, O. Seitz, P. G. Fernandes, R. Tian, N. Karnik, H.-C. Wen, H. Stiegler, R. A. Chapman, E. M. Vogel, and Y. J. Chabal, Journal of Materials Chemistry **21** (12), 4384 (2011).

341. *One-Step Selective Chemistry for Silicon-on-Insulator Sensor Geometries*, O. Seitz, P. G. Fernandes, G. A. Mahmud, H.-C. Wen, H. J. Stiegler, R. A. Chapman, E. M. Vogel, and Y. J. Chabal, Langmuir **27** (12), 7337 (2011).

340. *Nature of Hydrophilic Aluminum Fluoride and Oxyaluminum Fluoride Surfaces Resulting from XeF2 Treatment of Al and Al2O3*, K. Roodenko, M. D. Halls, Y. Gogte, O. Seitz, J. F. Veyan, and Y. J. Chabal, Journal of Physical Chemistry C **115** (43), 21351 (2011).

339. C. M. Pradier and Y. J. Chabal, *Biointerface Characterization by Advanced IR Spectroscopy*. (Elsevier, Oxford, 2011)

338. *Vanadium Oxide Nanowire-Carbon Nanotube Binder-Free Flexible Electrodes for Supercapacitors*, S. D. Perera, B. Patel, N. Nijem, K. Roodenko, O. Seitz, J. P. Ferraris, Y. J. Chabal, and K. J. Balkus, Jr., Advanced Energy Materials **1** (5), 936 (2011).

337. *Understanding the Preferential Adsorption of CO_2 over N_2 in a Flexible Metal-Organic Framework*, N. Nijem, P. Thissen, Y. Yao, R. C. Longo, K. Roodenko, H. Wu, Y. Zhao, K. Cho, J. Li, D. C. Langreth, and Y. J. Chabal, Journal of the American Chemical Society **133** (32), 12849 (2011).

336. *Spectroscopic Evidence for the Influence of the Benzene Sites on Tightly Bound H_2 in Metal-Organic Frameworks with Unsaturated Metal Centers: MOF-74-Cobalt*, N. Nijem, L. Kong, Y. Zhao, H. Wu, J. Li, D. C. Langreth, and Y. J. Chabal, Journal of the American Chemical Society **133** (13), 4782 (2011).

335. *Spectroscopic evidence for nonradiative energy transfer between colloidal CdSe/ZnS nanocrystals and functionalized silicon substrates*, H. M. Nguyen, O. Seitz, D. Aureau, A. Sra, N. Nijem, Y. N. Gartstein, Y. J. Chabal, and A. V. Malko, Applied Physics Letters **98** (16), 161904/1 (2011).

334. *The Effect of Methyl Functionalization on Microporous Metal-Organic Frameworks' Capacity and Binding Energy for Carbon Dioxide Adsorption*, H. Liu, Y. Zhao, Z. Zhang, N. Nijem, Y. J. Chabal, H. Zeng, and J. Li, Advanced Functional Materials **21**, 4754 (2011).

333. *Surface Reactions of μ^2-η^2-(^{t}Bu-acetylene)dicobalthexacarbonyl with Oxidized and H-terminated Si(111) Surfaces,* J. Kwon, M. Saly, M. D. Halls, R. K. Kanjolia, and Y. J. Chabal, Chemistry of Materials, *23* (8), pp 2068 (2011).

332. *First-principles approach to rotational-vibrational frequencies and infrared intensity for H_2 adsorbed in nanoporous materials*, L. Kong, Y. J. Chabal, and D. C. Langreth, Physical Review B **83** (12), 121402/1 (2011).

331. *Partially oxidized graphene as a precursor to graphene*, G. Eda, J. Ball, C. Mattevi, M. Acik, L. Artiglia, G. Granozzi, Y. Chabal, T. D. Anthopoulos, and M. Chhowalla, Journal of Materials Chemistry **21** (30), 11217 (2011).

330. *Effect of Titanium Doping of Al(111) Surfaces on Alane Formation, Mobility, and Desorption*, I. S. Chopra, S. Chaudhuri, J. F. Veyan, J. Graetz, and Y. J. Chabal, Journal of Physical Chemistry C **115** (33), 16701 (2011).

329. *Turning aluminium into a noble-metal-like catalyst for low-temperature activation of molecular hydrogen*, I. S. Chopra, S. Chaudhuri, J. F. Veyan, and Y. J. Chabal, Nature Materials **10** (11), 884 (2011).

328. *Comparison of methods to bias fully depleted SOI-based MOSFET nanoribbon pH sensors*, R. A. Chapman, P. G. Fernandes, O. Seitz, H. J. Stiegler, H.-C. Wen, Y. J. Chabal, and E. M. Vogel, IEEE Transactions on Electron Devices **58** (6), 1752 (2011).

327. *The Role of Oxygen during Thermal Reduction of Graphene Oxide Studied by Infrared Absorption Spectroscopy*, M. Acik, G. Lee, C. Mattevi, A. Pirkle, R. M. Wallace, M. Chhowalla, K. Cho, and Y. Chabal, Journal of Physical Chemistry C **115** (40), 19761 (2011).

326. *Nature of Graphene Edges: A Review*, M. Acik and Y. J. Chabal, Japanese Journal of Applied Physics **50** (7) (2011).

2010

325. *Study of thermal reduction of graphene oxide for device applications*, M. Acik, R. Guzman, and Y. J. Chabal, SRC Techcon proceedings (2010).

324. *XeF_2-induced removal of SiO_2 near Si surfaces at 300 K: An unexpected proximity effect*, J. F. Veyan, M. D. Halls, S. Rangan, D. Aureau, X. M. Yan, and Y. J. Chabal, Journal of Applied Physics **108** (11), 114914 (2010).

323. *Comparative time-resolved study of the XeF_2 etching of Mo and Si*, J. F. Veyan, D. Aureau, Y. Gogte, P. Campbell, X. M. Yan, and Y. J. Chabal, Journal of Applied Physics **108** (11), 114913 (2010).

322. *Infrared Characterization of Interfacial Si-O Bond Formation on Silanized Flat SiO_2/Si Surfaces*, R. Tian, O. Seitz, M. Li, W. C. Hu, Y. J. Chabal, and J. M. Gao, Langmuir **26** (7), 4563 (2010).

321. *Modification of the Adhesive Properties of XeF_2-Etched Aluminum Surfaces by Deposition of Organic Self-Assembled Monolayers*, K. Roodenko, O. Seitz, Y. Gogte, J. F. Veyan, X. M. Yan, and Y. J. Chabal, The Journal of Physical Chemistry C **114** (51), 22566 (2010).

320. *Modified phonon confinement model for Raman spectroscopy of nanostructured materials*, K. Roodenko, I. A. Goldthorpe, P. C. McIntyre, and Y. J. Chabal, Physical Review B **82** (11), 1152210 (2010).

319. *Multilayered Al/CuO thermite formation by reactive magnetron sputtering: Nano versus micro*, M. Petrantoni, C. Rossi, L. Salvagnac, V. Conedera, A. Esteve, C. Tenailleau, P. Alphonse, and Y. J. Chabal, Journal of Applied Physics **108** (8), 084323 (2010).

318. *Atomic Layer Deposition of Ru/RuO_2 Thin Films Studied by In situ Infrared Spectroscopy*, S. K. Park, R. Kanjolia, J. Anthis, R. Odedra, N. Boag, L. Wielunski, and Y. J. Chabal, Chemistry of Materials **22** (17), 4867 (2010).

317. *Multiscale modeling of interaction of alane clusters on Al(111) surfaces: A reactive force field and infrared absorption spectroscopy approach*, J. G. O. Ojwang, S. Chaudhuri, A. C. T. van Duin, Y. J. Chabal, J. F. Veyan, R. van Santen, G. J. Kramer, and W. A. Goddard, Journal of Chemical Physics **132** (8), 084509 (2010).

316. *Interaction of molecular hydrogen with microporous metal organic framework materials at room temperature*, N. Nijem, J.-F. Veyan, L. Kong, K. Li, S. Pramanik, Y. Zhao, J. Li, D. Langreth, and Y. J. Chabal, Journal of the American Chemical Society **132** (5), 1654 (2010).

315. *Molecular Hydrogen "Pairing" Interaction in a Metal Organic Framework System with Unsaturated Metal Centers (MOF-74)*, N. Nijem, J. F. Veyan, L. Z. Kong, H. H. Wu, Y. G. Zhao, J. Li, D. C. Langreth, and Y. J. Chabal, Journal of the American Chemical Society **132** (42), 14834 (2010).

314. *Nanopatterning Si(111) surfaces as a selective surface-chemistry route*, D. J. Michalak, S. R. Amy, D. Aureau, M. Dai, A. Esteve, and Y. J. Chabal, Nature Materials **9** (3), 266 (2010).

313. *Characteristics of high-k Al_2O_3 dielectric using ozone-based atomic layer deposition for dual-gated graphene devices*, B. Lee, G. Mordi, M. J. Kim, Y. J. Chabal, E. M. Vogel, R. M. Wallace, K. J. Cho, L. Colombo, and J. Kim, Applied Physics Letters **97** (4), 043107 (2010).

312. *Suppression of substrate oxidation during ozone based atomic layer deposition of $Al2O_3$: Effect of ozone flow rate*, J. Kwon, M. Dai, M. D. Halls, and Y. J. Chabal, Applied Physics Letters **97** (16), 162903 (2010).

311. *Effects of TaN, Ru, and Pt electrodes on thermal stability of hafnium-based gate stacks*, J. Kwon and Y. J. Chabal, Journal of Applied Physics **107** (12), 123505 (2010).

310. *Thermal stability comparison of TaN on HfO_2 and Al_2O_3*, J. Kwon and Y. J. Chabal, Applied Physics Letters **96** (15), 151907 (2010).

309. *Effect of mobile ions on ultrathin silicon-on-insulator-based sensors*, P. G. Fernandes, O. Seitz, R. A. Chapman, H. J. Stiegler, H. C. Wen, Y. J. Chabal, and E. M. Vogel, Applied Physics Letters **97** (3), 034103 (2010).

308. *Effects of the Local Environment on Si-H Stretching Frequencies for the Mixed Coverage X/H:Si(111) Surface (X=F, Cl, Br, and I)*, G. A. Ferguson, D. Aureau, Y. Chabal, and K. Raghavachari, Journal of Physical Chemistry C **114** (41), 17644 (2010).

307. *Surface and Interface Processes during Atomic Layer Deposition of Copper on Silicon Oxide*, M. Dai, J. Kwon, M. D. Halls, R. G. Gordon, and Y. J. Chabal, Langmuir **26** (6), 3911 (2010).

306. *Structural evolution during the reduction of chemically derived graphene oxide*, A. Bagri, C. Mattevi, M. Acik, Y. J. Chabal, M. Chhowalla, and V. B. Shenoy, Nature Chemistry **2** (7), 581 (2010).

305. *Controlled Deposition of Gold Nanoparticles on Well-Defined Organic Monolayer Grafted on Silicon Surfaces*, D. Aureau, Y. Varin, K. Roodenko, O. Seitz, O. Pluchery, and Y. J. Chabal, The Journal of Physical Chemistry C **114** (33), 14180 (2010).

304. *The Role of Intercalated Water in Multilayered Graphene Oxide*, M. Acik, C. Mattevi, C. Gong, G. Lee, K. Cho, M. Chhowalla, and Y. J. Chabal, ACS Nano **4** (10), 5861 (2010).

303. *Unusual infrared-absorption mechanism in thermally reduced graphene oxide*, M. Acik, G. Lee, C. Mattevi, M. Chhowalla, K. Cho, and Y. J. Chabal, Nature Materials **9** (10), 840 (2010).

302. *Generation and capture of CO_2 and CO in graphite oxide stacks during thermal reduction* M. Acik, R. Guzman, and Y. Chabal, Mater. Res. Soc. Symp. Proc. **1205E**, 1205 (2010).

2009

301. *Attachment Of Streptavidin-Biotin On 3-Aminopropyltriethoxysilane (APTES) Modified Porous Silicon Surfaces*, S. Singh, N. Lapin, P. K. Singh, M. A. Khan, and Y. J. Chabal, AIP Conference Proceedings **1147** (Transport and Optical Properties of Nanomaterials), 443 (2009).

300. *Copper-metal deposition on self assembled monolayer for making top contacts in molecular electronic devices*, O. Seitz, M. Dai, F. S. Aguirre-Tostado, R. M. Wallace, and Y. J. Chabal, Journal of the American Chemical Society **131** (50), 18159 (2009).

299. *In-situ studies of high-k dielectrics for graphene-based devices*, A. Pirkle, Y. J. Chabal, L. Colombo, and R. M. Wallace, Graphene and Emerging Materials for Post-Cmos Applications **19** (5), 215 (2009).

298. *Atomic layer deposition of ruthenium films on hydrogen terminated silicon*, S. K. Park, K. Roodenko, Y. J. Chabal, L. Wielunski, R. Kanjolia, J. Anthis, R. Odedra, and N. Boag, Materials Research Society Symposium Proceedings **1156** (Materials, Processes and Reliability for Advanced Interconnects for Micro- and Nanoelectronics), 1156 D04 02 (2009).

297. *Mechanisms of ion-induced GaN thin layer splitting*, O. Moutanabbir, Y. J. Chabal, M. Chicoine, S. Christiansen, R. Krause-Rehberg, F. Schiettekatte, R. Scholz, O. Seitz, S. Senz, F. Susskraut, and U. Gosele, Nuclear Instruments & Methods in Physics Research Section B-Beam Interactions with Materials and Atoms **267** (8-9), 1264 (2009).

296. *Atomic layer deposition of aluminum oxide on carboxylic acid-terminated self-assembled monolayers*, M. Li, M. Dai, and Y. J. Chabal, Langmuir **25** (4), 1911 (2009).

295. *Materials science of graphene for novel device applications*, G. Lee, C. Gong, A. Pirkle, A. Venugopal, B. Lee, S. Park, L. Goux, M. Acik, R. Guzman, Y. Chabal, J. Kim, E. M. Vogel, R. M. Wallace, M. J. Kim, L. Colombo, and K. Cho, Graphene and Emerging Materials for Post-Cmos Applications **19** (5), 185 (2009).

294. *Atomic-layer-deposited Al_2O_3 as gate dielectrics for graphene-based devices*, B. Lee, G. Mordi, T. J. Park, L. Goux, Y. J. Chabal, K. J. Cho, E. M. Vogel, M. J. Kim, L. Colombo, R. M. Wallace, and J. Kim, Graphene and Emerging Materials for Post-Cmos Applications **19** (5), 225 (2009).

293. *Infrared characterization of biotinylated silicon oxide surfaces, surface stability, and specific attachment of streptavidin*, N. A. Lapin and Y. J. Chabal, Journal of Physical Chemistry B **113** (25), 8776 (2009).

292. *RPM3: A multifunctional microporous MOF with recyclable framework and high H_2 binding energy*, A. J. Lan, K. H. Li, H. H. Wu, L. Z. Kong, N. Nijem, D. H. Olson, T. J. Emge, Y. J. Chabal, D. C. Langreth, M. C. Hong, and J. Li, Inorganic Chemistry **48** (15), 7165 (2009).

291. *In situ infrared characterization during atomic layer deposition of lanthanum oxide*, J. Kwon, M. Dai, M. D. Halls, E. Langereis, Y. J. Chabal, and R. G. Gordon, Journal of Physical Chemistry C **113** (2), 654 (2009).

290. *Alcohol washing as a way to stabilize the anatase phase of nanostructured titania through controlling particle packing*, K. N. P. Kumar, H. Izutsu, D. J. Fray, Y. Chabal, and T. Okubo, Journal of Materials Science **44** (21), 5944 (2009).

289. *Theoretical and experimental analysis of H_2 binding in a prototypical metal-organic framework material*, L. Z. Kong, V. R. Cooper, N. Nijem, K. H. Li, J. Li, Y. J. Chabal, and D. C. Langreth, Physical Review B **79** (8), 081407 (2009).

288. *Fundamental steps towards interface amorphization during silicon oxidation: Density functional theory calculations*, A. Hemeryck, A. Esteve, N. Richard, M. D. Rouhani, and Y. J. Chabal, Physical Review B **79** (3), 035317 (2009).

287. M. M. Frank and Y. J. Chabal, Surface and interface chemistry for gate stacks on silicon in *Into the Nano Era*, edited by H. R. Huff (2009), 113.

286. *The structure and vibrational spectrum of the Si(111)-H/Cl surface*, G. A. Ferguson, S. Rivillon, Y. Chabal, and K. Raghavachari, Journal of Physical Chemistry C **113** (52), 21713 (2009).

285. *Chemical properties of oxidized silicon carbide surfaces upon etching in hydrofluoric acid*, S. Dhar, O. Seitz, M. D. Halls, S. Choi, Y. J. Chabal, and L. C. Feldman, Journal of the American Chemical Society **131** (46), 16808 (2009).

284. *Nitrogen interaction with hydrogen-terminated silicon surfaces at the atomic scale*, M. Dai, Y. Wang, J. Kwon, M. D. Halls, and Y. J. Chabal, Nature Materials **8** (10), 825 (2009).

283. *FTIR study of copper agglomeration during atomic layer deposition of copper*, M. Dai, J. Kwon, Y. J. Chabal, M. D. Halls, and R. G. Gordon, Materials Research Society Symposium Proceedings **1155** (CMOS Gate-Stack Scaling), 1155 C11 06 (2009).

2008

282. *Genipin-induced changes in collagen gels: Correlation of mechanical properties to fluorescence*, H. G. Sundararaghavan, G. A. Monteiro, N. A. Lapin, Y. J. Chabal, J. R. Miksan, and D. I. Shreiber, Journal of Biomedical Materials Research Part A **87A** (2), 308 (2008).

281. *Testing the effect of surface coatings on alkali atom polarization lifetimes*, S. J. Seltzer, D. M. Rampulla, S. Rivillon-Amy, Y. J. Chabal, S. L. Bernasek, and M. V. Romalis, Journal of Applied Physics **104** (10), 103116 (2008).

280. *Formation of periodic nanostructure network through substrate-mediated assembly*, K. Prabhakaran, J. Kurian, K. N. P. Kumar, and Y. J. Chabal, Applied Surface Science **255** (5), 2063 (2008).

279. *Nanoscale actuation of electrokinetic flows on thermoreversible surfaces*, G. Paumier, J. Sudor, A. M. Gue, F. Vinet, M. Li, Y. J. Chabal, A. Esteve, and M. Djafari-Rouhani, Electrophoresis **29** (6), 1245 (2008).

278. *Attachment of 3-(Aminopropyl)triethoxysilane on silicon oxide surfaces: dependence on solution temperature*, R. M. Pasternack, S. R. Amy, and Y. J. Chabal, Langmuir **24** (22), 12963 (2008).

277. *Effective surface passivation methodologies for high performance germanium metal oxide semiconductor field effect transistors*, H. J. Na, J. C. Lee, D. Heh, P. Sivasubramani, P. D. Kirsch, J. W. Oh, P. Majhi, S. Rivillon, Y. J. Chabal, B. H. Lee, and R. Choi, Applied Physics Letters **93** (19), 192115 (2008).

276. *Investigation of the chemical purity of silicon surfaces reacted with liquid methanol*, D. J. Michalak, S. R. Amy, A. Esteve, and Y. J. Chabal, Journal of Physical Chemistry C **112** (31), 11907 (2008).

275. *Detection of a Formate Surface Intermediate in the Atomic Layer Deposition of High-Îº Dielectrics Using Ozone*, J. Kwon, M. Dai, M. D. Halls, and Y. J. Chabal, Chemistry of Materials **20** (10), 3248 (2008).

274. *UV-induced immobilization of tethered zirconocenes on H-terminated silicon surfaces*, H. Gruber-Woelfler, S. R. Amy, Y. J. Chabal, G. Schitter, E. Polo, M. Ringwald, and J. G. Khinast, Chemical Communications (11), 1329 (2008).

273. *Adsorbate-surface phonon interactions in deuterium-passivated si(111)-(1 x 1)*, G. A. Ferguson, K. Raghavachari, D. J. Michalak, and Y. Chabal, Journal of Physical Chemistry C **112** (4), 1034 (2008).

272. *Formation and bonding of alane clusters on Al(111) surfaces studied by infrared absorption spectroscopy and theoretical modeling*, S. Chaudhuri, S. Rangan, J. F. Veyan, J. T. Muckerman, and Y. J. Chabal, Journal of the American Chemical Society **130** (32), 10576 (2008).

2007

271. *Role of hydrogen in hydrogen-induced layer exfoliation of germanium*, J. M. Zahler, A. F. I. Morral, M. J. Griggs, H. A. Atwater, and Y. J. Chabal, Physical Review B **75** (3) (2007).

270. *Characterization of ultra-thin hafnium oxide films grown on silicon by atomic layer deposition using tetrakis(ethylmethyl-amino) hafnium and water precursors*, Y. Wang, M. T. Ho, L. V. Goncharova, L. S. Wielunski, S. Rivillon-Amy, Y. J. Chabal, T. Gustafsson, N. Moumen, and M. Boleslawski, Chemistry of Materials **19** (13), 3127 (2007).

269. *Infrared characterization of hafnium oxide grown by atomic layer deposition using ozone as the oxygen precursor*, Y. Wang, M. Dai, M. T. Ho, L. S. Wielunski, and Y. J. Chabal, Applied Physics Letters **90** (2) 022906 (2007).

268. *Molecular ordering in bis(phenylenyl)bithiophenes*, M. A. Stokes, R. Kortan, S. R. Amy, H. E. Katz, Y. J. Chabal, C. Kloc, and T. Siegrist, Journal of Materials Chemistry **17** (32), 3427 (2007).

267. *Difficulty for oxygen to incorporate into the silicon network during initial O_2 oxidation of Si(100)-(2x1)*, A. Hemeryck, A. J. Mayne, N. Richard, A. Esteve, Y. J. Chabal, M. D. Rouhani, G. Dujardin, and G. Comtet, Journal of Chemical Physics **126** (11), 114707 (2007).

266. *Using Multi Scale Modelling as a Characterization Tool to Complete Experimental Data*, A. Hemeryck, A. Esteve, M. D. Rouhani, A. J. Mayne, G. Dujardin, G. Comtet, N. Richard, and Y. J. Chabal, Materials Research Society Symposium Proceedings **967E** (Advances in In Situ Characterization of Film Growth and Interface Processes), 0967 U08 02 (2007).

265. *Hydrogen barrier layer against silicon oxidation during atomic layer deposition of Al_2O_3 and HfO_2*, M. M. Frank, Y. Wang, M. T. Ho, R. T. Brewer, N. Moumen, and Y. J. Chabal, Journal of the Electrochemical Society **154**, G44 (2007).

264. *In-situ FTIR study of atomic layer deposition (ALD) of copper metal films*, M. Dai, J. Kwon, E. Langereis, L. Wielunski, Y. J. Chabal, Z. Li, and R. G. Gordon, ECS Transactions **11** (7, Atomic Layer Deposition Applications 3), 91 (2007).

263. *In-situ infrared absorption monitoring of atomic layer deposition of metal oxides on functionalized Si and Ge surfaces*, M. Dai, J. Kwon, M.-T. Ho, Y. Wang, S. Rivillon, M. Li, Y. J. Chabal, and M. Boleslawski, Materials Research Society Symposium Proceedings **996E** (Characterization of Oxide/Semiconductor Interfaces for CMOS Technologies), 0996 H07 04 (2007).

262. Y. J. Chabal, G. S. Higashi, and R. J. Small, Surface chemical composition and morphology in *Handbook of Silicon Wafer Cleaning Technology*, edited by K.A. Reinhardt and W. Kern (William Andrew, Norwich, 2007).

261. *Investigation of the reactions during alkylation of chlorine-terminated silicon (111) surfaces*, S. R. Amy, D. J. Michalak, Y. J. Chabal, L. Wielunski, P. T. Hurley, and N. S. Lewis, Journal of Physical Chemistry C **111** (35), 13053 (2007).

260. S. R. Amy and Y. J. Chabal, Passivation and characterization of germanium surfaces in *Advanced Gate Stacks for High-Mobility Semiconductors* (2007), 73.

2006

259. *Transmission infrared spectroscopy of methyl- and ethyl-terminated silicon(111) surfaces*, L. J. Webb, S. Rivillon, D. J. Michalak, Y. J. Chabal, and N. S. Lewis, Journal of Physical Chemistry B **110** (14), 7349 (2006).

258. *In situ infrared absorption spectroscopy for thin film growth by atomic layer deposition - art. no. 63250G*, Y. Wang, M. Dai, S. Rivillon, M. T. Ho, and Y. J. Chabal, Physical Chemistry of Interfaces and Nanomaterials V **6325**, G3250 (2006).

257. *Hydrogen nanochemistry achieving clean and pre-oxidized silicon carbide surface metallization*, P. Soukiassian, M. G. Silly, C. Radtke, H. Enriquez, M. D'Angelo, V. Derycke, V. Y. Aristov, F. Amy, Y. J. Chabal, P. Moras, M. Pedio, S. Gardonio, C. Ottaviani, and P. Perfetti, Silicon Carbide and Related Materials 2005, Pts 1 and 2 **527-529**, 667 (2006).

256. *Preparation of tuneable biofunctionalized surfaces for sensing and biomedical applications*, G. Schitter, H. Woelfler, S. Rivillon, Y. Chabal, and J. Khinast, AIChE Annual Meeting, Conference Proceedings, San Francisco, CA, United States, Nov. 12-17, 2006, 322d/1 (2006).

255. *Wet chemical cleaning of germanium surfaces for growth of high-k dielectrics*, S. Rivillon-Amy, Y. J. Chabal, F. Amy, A. Kahn, C. Krugg, and P. Kirsch, MRS proc. **917E**, E01 (2006).

254. *Alkylation of silicon(111) surfaces*, S. Rivillon and Y. J. Chabal, Journal De Physique Iv **132**, 195 (2006).

253. *Infrared spectroscopic investigation of the reaction of hydrogen-terminated, (111)-oriented, silicon surfaces with liquid methanol*, D. J. Michalak, S. Rivillon, Y. J. Chabal, A. Esteve, and N. S. Lewis, Journal of Physical Chemistry B **110** (41), 20426 (2006).

252. *Thermal stability of amorphous $LaScO_3$ films on silicon*, L. F. Edge, D. G. Schlom, S. Rivillon, Y. J. Chabal, M. P. Agustin, S. Stemmer, T. Lee, M. J. Kim, H. S. Craft, J. P. Maria, M. E. Hawley, B. Hollander, J. Schubert, and K. Eisenbeiser, Applied Physics Letters **89** (6), 062902 (2006).

2005

251. *Ion backscattering study of ultra-thin oxides: Al_2O_3 and $AlHfO_x$ films on Si*, L. S. Wielunski, Y. Chabal, M. Paunescu, M. T. Ho, R. Brewer, and J. E. Reyes, Nuclear Instruments & Methods in Physics Research Section B-Beam Interactions with Materials and Atoms **241** (1-4), 377 (2005).

250. *Structural characterization of a functionalized organic semiconductor*, M. Stickle, R. Kortan, S. Rivillon, Z. Bao, H. Katz, and Y. Chabal, Materials Research Society Symposium Proceedings **871E** (Organic Thin-Film Electronics), 3 16 (2005).

249. *Chlorination of hydrogen-terminated silicon(111) surfaces*, S. Rivillon, Y. J. Chabal, L. J. Webb, D. J. Michalak, N. S. Lewis, M. D. Halls, and K. Raghavachari, Journal of Vacuum Science & Technology A **23** (4), 1100 (2005).

248. *Hydrogen passivation of germanium (100) surface using wet chemical preparation*, S. Rivillon, Y. J. Chabal, F. Amy, and A. Kahn, Applied Physics Letters **87** (25), 253101 (2005).

247. *Water reaction with chlorine-terminated silicon (111) and (100) surfaces*, S. Rivillon, R. T. Brewer, and Y. J. Chabal, Applied Physics Letters **87** (17), 173118 (2005).

246. *Spectroscopic studies of the mechanism for hydrogen-induced exfoliation of InP*, A. F. Morral, J. M. Zahler, M. J. Griggs, H. A. Atwater, and Y. J. Chabal, Physical Review B **72** (8), 085219 (2005).

245. *Controlled silicon surface functionalization by alkene hydrosilylation*, A. Langner, A. Panarello, S. Rivillon, O. Vassylyev, J. G. Khinast, and Y. J. Chabal, Journal of the American Chemical Society **127** (37), 12798 (2005).

244. *In situ infrared spectroscopy of hafnium oxide growth on hydrogen-terminated silicon surfaces by atomic layer deposition*, M. T. Ho, Y. Wang, R. T. Brewer, L. S. Wielunski, Y. J. Chabal, N. Moumen, and M. Boleslawski, Applied Physics Letters **87** (13), 133103 (2005).

243. *HfO_2 and Al_2O_3 gate dielectrics on GaAs grown by atomic layer deposition*, M. M. Frank, G. D. Wilk, D. Starodub, T. Gustafsson, E. Garfunkel, Y. J. Chabal, J. Grazul, and D. A. Muller, Applied Physics Letters **86** (15), 152904 (2005).

242. *High-k gate dielectrics on silicon and germanium: Impact of surface preparation*, M. M. Frank, H. Shang, S. Rivillon, F. Amy, C. L. Hsueh, V. Paruchuri, R. T. Mo, M. Copel, E. P. Gusev, M. A. Gribelyuk,

and Y. J. Chabal, Solid State Phenomena Ultra Clean Processing of Silicon Surfaces Vii **103-104**, 3 (2005).

241. M. M. Frank and Y. J. Chabal, Mechanistics studies of dielectric growth on silicon in *Materials fundamental of gate dielectrics*, edited by A. A. Demkov and A. Navrotsky (Kluwer Academic Publisher, 2005), 367.

240. *Spectroscopic studies of the mechanism for hydrogen-induced exfoliation of InP*, A. Fontcuberta i Morral, J. M. Zahler, M. J. Griggs, H. A. Atwater, and Y. J. Chabal, Physical Review B: Condensed Matter and Materials Physics **72** (8), 085219/1 (2005).

239. *Silicon surface and interface issues for nanoelectronics*, Y. Chabal and L. C. Feldman, Interface **14** (1), 31 (2005).

2004

238. *Gas phase chlorination of hydrogen-passivated silicon surfaces*, S. Rivillon, F. Amy, Y. J. Chabal, and M. M. Frank, Applied Physics Letters **85** (13), 2583 (2004).

237. *Infrared spectroscopic analysis of an ordered Si/SiO_2 interface*, K. T. Queeney, N. Herbots, J. M. Shaw, V. Atluri, and Y. J. Chabal, Applied Physics Letters **84** (4), 493 (2004).

236. *Wet chemical cleaning of plasma oxide grown on heated (001)InP surfaces*, B. Lita, O. Pluchery, R. L. Opila, Y. J. Chabal, G. Bunea, J. P. Holman, and E. J. Bekos, Journal of Vacuum Science & Technology B **22** (4), 1885 (2004).

235. *Hafnium oxide gate dielectrics grown from an alkoxide precursor: structure and defects*, M. M. Frank, S. Sayan, S. Dormann, T. J. Emge, L. S. Wielunski, E. Garfunkel, and Y. J. Chabal, Materials Science and Engineering B-Solid State Materials for Advanced Technology **109** (1-3), 6 (2004).

234. *Suppression of subcutaneous oxidation during the deposition of amorphous lanthanum aluminate on silicon*, L. F. Edge, D. G. Schlom, R. T. Brewer, Y. J. Chabal, J. R. Williams, S. A. Chambers, C. Hinkle, G. Lucovsky, Y. Yang, S. Stemmer, M. Copel, B. Hollander, and J. Schubert, Applied Physics Letters **84** (23), 4629 (2004).

233. *Metallic contact formation for molecular electronics: interactions between vapor-deposited metals and self-assembled monolayers of conjugated mono- and dithiols*, B. de Boer, M. M. Frank, Y. J. Chabal, W. R. Jiang, E. Garfunkel, and Z. Bao, Langmuir **20** (5), 1539 (2004).

232. *Ammonia pretreatment for high-k dielectric growth on silicon*, R. T. Brewer, M. T. Ho, K. Z. Zhang, L. V. Goncharova, D. G. Starodub, T. Gustafsson, Y. J. Chabal, and N. Moumen, Applied Physics Letters **85** (17), 3830 (2004).

2003

231. *The microscopic origin of optical phonon evolution during water oxidation of Si(100)*, K. T. Queeney, M. K. Weldon, Y. J. Chabal, and K. Raghavachari, Journal of Chemical Physics **119** (4), 2307 (2003).

230. *Wet chemical cleaning of InP surfaces investigated by in situ and ex situ infrared spectroscopy*, O. Pluchery, Y. J. Chabal, and R. L. Opila, Journal of Applied Physics **94** (4), 2707 (2003).

229. *Electrical and structural characterization of the interface of wafer bonded InP/Si*, A. F. I. Morrall, J. M. Zahler, H. A. Atwater, M. M. Frank, Y. J. Chabal, P. Ahrenkiel, and M. Wanlass, Integration of Heterogeneous Thin-Film Materials and Devices **768**, 27 (2003).

228. *Advances in high-k gate dielectrics for Si and III-V semiconductors*, J. Kwo, M. Hong, B. Busch, D. A. Muller, Y. J. Chabal, A. R. Kortan, J. P. Mannaerts, B. Yang, P. Ye, H. Gossmann, A. M. Sergent, K. K. Ng, J. Bude, W. H. Schulte, E. Garfunkel, and T. Gustafsson, Journal of Crystal Growth **251** (1-4), 645 (2003).

227. *Structural and electrical characterization of organic monolayers on surfaces*, W. Jiang, O. Celik, N. Zhitenev, Z. Bao, B. de Boer, J. Zaumseil, Y. J. Chabal, M. M. Frank, and E. Garfunkel, Polymer preprints **44**, 372 (2003).

226. *Atomic layer deposition of Al_2O_3 on H-passivated Si: $Al(CH_3)_2OH$ surface reactions with H/Si(100)-2X1*, M. D. Halls, K. Raghavachari, M. M. Frank, and Y. J. Chabal, Physical Review B **68** (16), 161302 (2003).

225. *Self-assembled monolayers of conjugated thiols studied by infrared spectroscopy: structure and metal electrode deposition*, M. M. Frank, B. de Boer, Y. J. Chabal, and Z. Bao, Polymer preprints **44**, 383 (2003).

224. *Nucleation and interface formation mechanisms in atomic layer deposition of gate oxides*, M. M. Frank, Y. J. Chabal, and G. D. Wilk, Applied Physics Letters **82** (26), 4758 (2003).

223. *In situ spectroscopic approach to atomic layer deposition*, M. M. Frank, Y. J. Chabal, and G. D. Wilk, Novel Materials and Processes for Advanced Cmos **745**, 41 (2003).

222. *Enhanced initial growth of atomic-layer-deposited metal oxides on hydrogen-terminated silicon*, M. M. Frank, Y. J. Chabal, M. L. Green, A. Delabie, B. Brijs, G. D. Wilk, M. Y. Ho, E. B. O. da Rosa, I. J. R. Baumvol, and F. C. Stedile, Applied Physics Letters **83** (4), 740 (2003).

221. *Nanochemistry at the atomic scale revealed in hydrogen-induced semiconductor surface metallization*, V. Derycke, P. G. Soukiassian, F. Amy, Y. J. Chabal, M. D. D'Angelo, H. B. Enriquez, and M. G. Silly, Nature Materials **2**, 253 (2003).

220. *Synthesis and characterization of conjugated mono- and dithiol oligomers and characterization of their self-assembled monolayers*, B. de Boer, H. Meng, D. F. Perepichka, J. Zheng, M. M. Frank, Y. J. Chabal, and Z. N. Bao, Langmuir **19** (10), 4272 (2003).

219. *Interaction of H, O_2, and H_2O with 3C-SiC surfaces*, F. Amy and Y. J. Chabal, Journal of Chemical Physics **119** (12), 6201 (2003).

2002

218. *The surface science of semiconductor processing: gate oxides in the ever-shrinking transistor*, M. K. Weldon, K. T. Queeney, J. Eng, K. Raghavachari, and Y. J. Chabal, Surface Science **500** (1-3), 859 (2002).

217. *Vibrational study of indium phosphide oxides*, O. Pluchery, J. Eng, R. L. Opila, and Y. J. Chabal, Surface Science **502**, 75 (2002).

216. *Morphology, conduction and interfacial characteristics of ultrathin (tequ=1.0nm) gate dielectrics: A study of critical integration issues for high-k dielectrics*, J. Kwo, B. Busch, D. A. Muller, M. Hong, Y. J. Chabal, L. Manchanda, A. R. Kortan, J. P. Mannaerts, T. Boone, W. H. Schulte, E. Garfunkel, and T. Gustafsson, IEDM proceedings, 35 (2002).

215. *In situ vibrational study of SiO_2/liquid interfaces*, H. Fukidome, O. Pluchery, K. T. Queeney, Y. Caudano, K. Raghavachari, M. K. Weldon, E. E. Chaban, S. B. Christman, H. Kobayashi, and Y. J. Chabal, Surface Science **502**, 498 (2002).

214. *Silanone (Si = O) on Si(100): intermediate for initial silicon oxidation*, Y. J. Chabal, K. Raghavachari, X. Zhang, and E. Garfunkel, Physical Review B **66** (16), 161315 (2002).

213. *Applications of infrared absorption spectroscopy to the microelectronics industry*, Y. J. Chabal and K. Raghavachari, Surface Science **502**, 41 (2002).

212. Y. J. Chabal, Internal transmission spectroscopy in *Handbook of Vibrational Spectroscopy*, edited by J. M. Chalmers and P.R. Griffiths (John Wiley & sons, 2002), 1117.

211. *Investigation of the bending vibrations of vicinal H/Si(111) surfaces by infrared spectroscopy*, Y. Caudano, P. A. Thiry, and Y. J. Chabal, Surface Science **502**, 91 (2002).

210. *Materials characterization of alternative gate dielectrics*, B. W. Busch, O. Pluchery, Y. J. Chabal, D. A. Muller, R. L. Opila, J. R. Kwo, and E. Garfunkel, Mrs Bulletin **27** (3), 206 (2002).

2001

209. *Stability of HF-etched Si(100) surfaces in oxygen ambient*, X. Zhang, E. Garfunkel, Y. J. Chabal, S. B. Christman, and E. E. Chaban, Applied Physics Letters **79** (24), 4051 (2001).

208. *Oxidation of H-covered flat and vicinal Si(111)-1x1 surfaces*, X. Zhang, Y. J. Chabal, S. B. Christman, E. E. Chaban, and E. Garfunkel, Journal of Vacuum Science & Technology a-Vacuum Surfaces and Films **19** (4), 1725 (2001).

207. *In-situ FTIR studies of reactions at the silicon/liquid interface: Wet chemical etching of ultrathin SiO_2 on Si(100)*, K. T. Queeney, H. Fukidome, E. E. Chaban, and Y. J. Chabal, Journal of Physical Chemistry B **105** (18), 3903 (2001).

206. *Role of interdimer interactions in NH_3 dissociation on Si(100)-(2 x 1)*, K. T. Queeney, Y. J. Chabal, and K. Raghavachari, Physical Review Letters **86** (6), 1046 (2001).

205. *Properties of high-k gate dielectrics Gd_2O_3 and Y_2O_3 for Si*, J. Kwo, M. Hong, A. R. Kortan, K. L. Queeney, Y. J. Chabal, R. L. Opila, D. A. Muller, S. N. G. Chu, B. J. Sapjeta, T. S. Lay, J. P. Mannaerts, T. Boone, H. W. Krautter, J. J. Krajewski, A. M. Sergnt, and J. M. Rosamilia, Journal of Applied Physics **89** (7), 3920 (2001).

204. *Silicon surfaces and formation of interfaces: Basic science in the industrial world*, D. Jarek, M. Hans-Joachim, and J. C. Yves, Physics Today **54** (10), 76 (2001).

203. *Water-saturated Si(100)-(2x1): Kinetic Monte Carlo simulations of thermal oxygen incorporation*, A. Esteve, Y. J. Chabal, K. Raghavachari, M. K. Weldon, K. T. Queeney, and M. D. Rouhani, Journal of Applied Physics **90** (12), 6000 (2001).

202. Y. J. Chabal, M. K. Weldon, K. T. Queeney, and A. Estève, Vibrational studies of ultra-thin oxides and initial silicon oxidation in *Fundamental Aspects of Silicon Oxidation*, edited by Y. J. Chabal (Springer, Berlin Heidelberg New York, 2001), 143.

201. Y. J. Chabal, M. K. Weldon, and K. T. Queeney, Ultra thin oxides and initial silicon oxidation in *Fundamental aspects of silicon oxidation*, edited by Y. J. Chabal (Springer, Berlin, Heidelberg, 2001), 143.

200. *Atomic scale oxidation of a complex system: O_2/α-SiC(0001)-(3x3)*, F. Amy, H. Enriquez, P. Soukiassian, P. F. Storino, Y. J. Chabal, A. J. Mayne, G. Dujardin, Y. K. Hwu, and C. Brylinski, Physical Review Letters **86** (19), 4342 (2001).

2000

199. *Thermal oxidation of silicon with hydrogen and oxygen for gate oxide application in integrated circuit devices*, E. Yang, Y. Ma, J. Eng, R. L. Opila Jr, and Y. J. Chabal, Proc. Electrochem. Soc. **585**, M3 (2000).

198. *Si-H bending modes as a probe of local chemical structure: Thermal and chemical routes to decomposition of H2O on Si(100)-(2Ã—1)*, M. K. Weldon, K. T. Queeney, A. B. Gurevich, B. B. Stefanov, Y. J. Chabal, and K. Raghavachari, Journal of Chemical Physics **113** (6), 2440 (2000).

197. *Infrared spectroscopic analysis of the Si/SiO_2 interface structure of thermally oxidized silicon*, K. T. Queeney, M. K. Weldon, J. P. Chang, Y. J. Chabal, A. B. Gurevich, J. Sapjeta, and R. L. Opila, Journal of Applied Physics **87** (3), 1322 (2000).

196. *High performance, highly reliable gate oxide formed with rapid thermal oxidation in-situ steam generation (ISSG) technique*, Y. Ma, Y. Chen, M. Brown, F. Li, J. Eng Jr., R. L. Opila, Y. J. Chabal, B. J. Sapjeta, D. Muller, G. Xing, T. Trowbridge, M. Khau, and N. Tam, Proc. Electrochemical society "Rapid Thermal and other short-time processing technologies II **2000-9**, 179 (2000).

195. *High epsilon gate dielectrics Gd_2O_3 and Y_2O_3 for silicon*, J. Kwo, M. Hong, A. R. Kortan, K. T. Queeney, Y. J. Chabal, J. P. Mannaerts, T. Boone, J. J. Krajewski, A. M. Sergent, and J. M. Rosamilia, Applied Physics Letters **77** (1), 130 (2000).

194. *The evolution of chemical oxides into ultrathin oxides: a spectroscopic characterization*, J. Eng, Jr., R. L. Opila, J. M. Rosamilia, B. J. Sapjeta, Y. J. Chabal, T. Boone, R. Masaitis, T. Sorsch, and M. L. Green, Diffusion and Defect Data--Solid State Data, Pt. B: Solid State Phenomena **76-77** (Ultra Clean Processing of Silicon Surfaces 2000), 145 (2000).

193. *Mechanistic studies of wafer bonding and thin silicon film exfoliation*, Y. J. Chabal, E. D. Isaacs, and M. K. Weldon, MRS Symp. Proc. **587**, O4.4.1 (2000).

1999

192. *Mechanistic studies of silicon oxidation*, M. K. Weldon, K. T. Queeney, Y. J. Chabal, B. B. Stefanov, and K. Raghavachari, Journal of Vacuum Science & Technology B **17** (4), 1795 (1999).

191. *FT-IR studies of elementary processes in silicon oxidation*, M. K. Weldon, K. T. Queeney, and Y. J. Chabal, Proc. 12th Int. Conf. on Fourier Transform Spectroscopy, 153 (1999).

190. *Hydrogen-induced exfoliation of crystalline silicon*, M. K. Weldon and Y. J. Chabal, EMIS Datareviews Series **20** (Properties of Crystalline Silicon), 942 (1999).

189. *Physics and chemistry of silicon wafer bonding*, M. K. Weldon and Y. J. Chabal, EMIS Datareviews Series **20** (Properties of Crystalline Silicon), 905 (1999).

188. *Silicon oxidation and ultra-thin oxide formation on silicon studied by infrared absorption spectroscopy*, K. T. Queeney, Y. J. Chabal, M. K. Weldon, and K. Raghavachari, Physica Status Solidi a-Applied Research **175** (1), 77 (1999).

187. *X-ray photoelectron study of gate oxides and nitrides*, R. L. Opila, J. P. Chang, M. Du, J. Bevk, Y. Ma, M. Weldon, Y. Chabal, and A. Gurevich, Solid State Phenomena **65-6**, 257 (1999).

186. *Anharmonic adlayer vibrations on the Si(111): H surface*, R. Honke, P. Jakob, Y. J. Chabal, A. Dvorak, S. Tausendpfund, W. Stigler, P. Pavone, A. P. Mayer, and U. Schroder, Physical Review B **59** (16), 10996 (1999).

185. *Thermal evolution of impurities in wet chemical silicon oxides*, A. B. Gurevich, M. K. Weldon, Y. J. Chabal, R. L. Opila, and J. Sapjeta, Applied Physics Letters **74** (9), 1257 (1999).

184. *Molecules at surfaces and interfaces studied using vibrational spectroscopies and related techniques*, P. Dumas, M. K. Weldon, Y. J. Chabal, and G. P. Williams, Surface Review and Letters **6** (2), 225 (1999).

183. *Characterization and production metrology of thin transistor gate oxide films*, A. C. Diebold, D. Venables, Y. Chabal, D. Muller, M. Weldon, and E. Garfunkel, Materials Science in Semiconductor Processing **2** (2), 103 (1999).

182. *Infrared absorption studies of wet chemical oxides: Thermal evolution of impurities*, Y. J. Chabal, M. K. Weldon, A. B. Gurevich, and S. B. Christman, Solid State Phenomena **65-6**, 253 (1999).

181. *Spectroscopic studies of H-decorated interstitials and vacancies in thin-film silicon exfoliation*, Y. J. Chabal, M. K. Weldon, Y. Caudano, B. B. Stefanov, and K. Raghavachari, Physica B-Condensed Matter **274**, 152 (1999).

180. Y. J. Chabal, Passivation of crystalline silicon surfaces in *Properties of Crystalline Silicon*, edited by R. Hull (Datareviews Series 20, 1999), 211.

1998

179. *Novel co-sputtered fluorinated amorphous carbon films for sub-0.25 mu m low-K damascene multilevel interconnect applications*, W. Zhu, C. S. Pai, H. E. Bair, H. W. Krautter, R. L. Opila, B. S. Dennis, A. Pinczuk, Y. J. Chabal, G. Grundmeier, J. E. Graebner, K. P. Cheung, F. C. Schilling, C. B. Case, R. Liu, and S. Jin, International Electron Devices Meeting 1998 - Technical Digest, 845 (1998).

178. *Mechanistic studies of silicon wafer bonding and layer exfoliation*, M. K. Weldon, V. E. Marsico, Y. J. Chabal, A. Agarwal, D. J. Eaglesham, J. Sapjeta, W. L. Brown, D. C. Jacobson, Y. Caudano, S. B. Christman, and E. E. Chaban, Semiconductor Wafer Bonding: Science, Technology, and Applications Iv **36**, 229 (1998).

177. *Mechanism of silicon exfoliation induced by hydrogen/helium co-implantation*, M. K. Weldon, M. Collot, Y. J. Chabal, V. C. Venezia, A. Agarwal, T. E. Haynes, D. J. Eaglesham, S. B. Christman, and E. E. Chaban, Applied Physics Letters **73** (25), 3721 (1998).

176. *The role of implantation damage in the production of silicon-on-insulator films by co-implantation of He+ and H+*, V. C. Venezia, T. E. Haynes, A. Agarwal, D. J. Eaglesham, O. W. Holland, M. K. Weldon, and Y. J. Chabal, Proceedings of the Eighth International Symposium on Silicon Materials Science and Technology. **2**, 1385 (1998).

175. *Silicon epoxide: Unexpected intermediate during silicon oxide formation*, B. B. Stefanov, A. B. Gurevich, M. K. Weldon, K. Raghavachari, and Y. J. Chabal, Physical Review Letters **81** (18), 3908 (1998).

174. *Initial stage of the growth of Fe on Si(111)(1x1)-H*, M. G. Martin, J. Avila, M. Gruyters, C. Teodorescu, P. Dumas, Y. J. Chabal, and M. C. Asensio, Applied Surface Science **123**, 156 (1998).

173. *Hydrogen structures in heavily hydrogenated crystalline and amorphous silicon*, W. B. Jackson, A. Franz, Y. Chabal, M. K. Weldon, H. C. Jin, and J. R. Abelson, Hydrogen in Semiconductors and Metals **513**, 381 (1998).

172. *Heterogeneous nucleation of oxygen on silicon: Hydroxyl-mediated interdimer coupling on Si(100)-(2 x 1)*, A. B. Gurevich, B. B. Stefanov, M. K. Weldon, Y. J. Chabal, and K. Raghavachari, Physical Review B **58** (20), R13434 (1998).

171. *An infrared study of $H_8Si_8O_{12}$ cluster adsorption on Si(100) surfaces*, J. Eng, K. Raghavachari, L. M. Struck, Y. J. Chabal, B. E. Bent, M. M. Banaszak-Holl, F. R. McFeely, A. M. Michaels, G. W. Flynn, S. B. Christman, E. E. Chaban, G. P. Williams, K. Radermacher, and S. Mantl, Journal of Chemical Physics **108** (20), 8680 (1998).

170. *Spectroscopic and theoretical investigations of hydrogen-induced exfoliation of silicon: Si-H bending modes*, Y. Caudano, M. K. Weldon, Y. J. Chabal, B. B. Stefanov, K. Raghavachari, D. C. Jacobson, S. B. Christman, and E. E. Chaban, Semiconductor Wafer Bonding: Science, Technology, and Applications Iv **36**, 365 (1998).

169. *Intermixing at the tantalum oxide/silicon interface in gate dielectric structures*, G. B. Alers, D. J. Werder, Y. Chabal, H. C. Lu, E. P. Gusev, E. Garfunkel, T. Gustafsson, and R. S. Urdahl, Applied Physics Letters **73** (11), 1517 (1998).

1997

168. *Initial H_2O-induced oxidation of Si(100)-(2x1)*, M. K. Weldon, B. B. Stefanov, K. Raghavachari, and Y. J. Chabal, Physical Review Letters **79** (15), 2851 (1997).

167. *Mechanism of silicon exfoliation by hydrogen implantation and He, Li and Si co-implantation*, M. K. Weldon, V. E. Marsico, Y. J. Chabal, M. Collot, Y. Caudano, S. B. Christman, E. E. Chaban, D. C. Jacobson, W. L. Brown, J. Sapjeta, C. M. Hsieh, C. A. Goodwin, A. Agarwal, V. C. Venezia, T. E. Haynes, and W. B. Jackson, 1997 Ieee International Soi Conference Proceedings, 124 (1997).

166. *On the mechanism of the hydrogen-induced exfoliation of silicon*, M. K. Weldon, V. E. Marsico, Y. J. Chabal, A. Agarwal, D. J. Eaglesham, J. Sapjeta, W. L. Brown, D. C. Jacobson, Y. Caudano, S. B. Christman, and E. E. Chaban, Journal of Vacuum Science & Technology B **15** (4), 1065 (1997).

165. *Vibrational study of silicon oxidation: H_2O on Si(100)*, L. M. Struck, J. Eng, B. E. Bent, G. W. Flynn, Y. J. Chabal, S. B. Christman, E. E. Chaban, K. Raghavachari, G. P. Williams, K. Radermacher, and S. Mantl, Surface Science **380** (2-3), 444 (1997).

164. *Infrared spectroscopy of covalently bonded species on silicon surfaces: Deuterium, chlorine, and cobalt tetracarbonyl*, H. H. Luo, C. E. D. Chidsey, and Y. Chabal, Science and Technology of Semiconductor Surface Preparation **477**, 415 (1997).

163. *A vibrational study of ethanol adsorption on Si(100)*, J. Eng, K. Raghavachari, L. M. Struck, Y. J. Chabal, B. E. Bent, G. W. Flynn, S. B. Christman, E. E. Chaban, G. P. Williams, K. Radermacher, and S. Manti, Journal of Chemical Physics **106** (23), 9889 (1997).

162. *Adsorption and reactivity of NO on Cu(111): A synchrotron infrared reflection absorption spectroscopic study*, P. Dumas, M. Suhren, Y. J. Chabal, C. J. Hirschmugl, and G. P. Williams, Surface Science **371** (2-3), 200 (1997).

161. *Applications of infrared absorption spectroscopy to the microelectronic industry*, Y. J. Chabal, M. K. Weldon, and V. E. Marsico, Journal De Physique Iv **7** (C6, Surfaces et Interfaces des Materiaux Advances), C6/3 (1997).

160. *Efficient production of silicon-on-insulator films by co-implantation of He+ with H+*, A. Agarwal, T. E. Haynes, V. C. Venezia, D. J. Eaglesham, M. K. Weldon, Y. J. Chabal, and O. W. Holland, 1997 Ieee International Soi Conference Proceedings, 44 (1997).

1996

159. *Infrared spectroscopy as a probe of fundamental processes in microelectronics: Silicon wafer cleaning and bonding*, M. K. Weldon, V. E. Marsico, Y. J. Chabal, D. R. Hamann, S. B. Christman, and E. E. Chaban, Surface Science **368**, 163 (1996).

158. *Mechanistic studies of hydrophilic wafer bonding and Si exfoliation for SOI fabrication*, M. K. Weldon, V. Marsico, Y. J. Chabal, S. B. Christman, E. E. Chaban, D. C. Jacobson, J. B. Sapjeta, A. Pinczuk, B. S. Dennis, A. P. Mills, C. A. Goodwin, and C. M. Hsieh, 1996 IEEE International Soi Conference Proceedings, 150 (1996).

157. *Physics and chemistry of silicon wafer bonding investigated by infrared absorption spectroscopy*, M. K. Weldon, Y. J. Chabal, D. R. Hamann, S. B. Christman, E. E. Chaban, and L. C. Feldman, Journal of Vacuum Science & Technology B **14** (4), 3095 (1996).

156. *Infrared spectroscopy of oxide formation at silicon interfaces*, M. K. Weldon, Y. J. Chabal, S. B. Christman, E. E. Chaban, L. C. Feldman, C. A. Goodwin, and C. M. Hsieh, Proceedings of the Seventh International Symposium on Silicon-on-Insulator Technology and Devices **96** (3), 121 (1996).

155. *Vibrational interactions at surfaces: H_2O on Si(100)*, K. Raghavachari, Y. J. Chabal, and L. M. Struck, Chemical Physics Letters **252** (3-4), 230 (1996).

154. *Vibrational study of C-60 overlayers on H/Si(111)-(1x1)*, P. Dumas, M. Gruyters, P. Rudolf, L. M. He, L. M. Yu, G. Gensterblum, R. Caudano, and Y. J. Chabal, Surface Science **368**, 330 (1996).

1995

153. *The role of hydrogen in silicon wafer bonding: An infrared study*, M. K. Weldon, Y. J. Chabal, S. B. Christman, J. Bourcereau, C. A. Goodwin, C. M. Hsieh, S. Nakahara, R. H. Shanaman, W. G. Easter, and L. C. Feldman, 1995 IEEE International Soi Conference Proceedings, 168 (1995).

152. *Silicon surface chemistry by IR spectroscopy in the mid- to far-IR region: H_2O and ethanol on Si(100)*, L. M. Struck, J. Eng, B. E. Bent, Y. J. Chabal, G. P. Williams, A. E. White, S. Christman, E. E. Chaban, K. Raghavachari, G. W. Flynn, K. Rademacher, and S. Mantl, Ultraclean Semiconductor Processing Technology and Surface Chemical Cleaning and Passivation **386**, 395 (1995).

151. *Size, shape, and crystallinity of luminescent structures in oxidized Si nanoclusters and H-passivated porous Si*, S. Schuppler, S. L. Friedman, M. A. Marcus, D. L. Adler, Y. H. Xie, F. M. Ross, T. D. Harris, W. L. Brown, Y. J. Chabal, P. J. Szajowski, E. E. Chaban, L. E. Brus, and P. H. Citrin, Microcrystalline and Nanocrystalline Semiconductors **358**, 407 (1995).

150. *X-ray absorption spectroscopy from H-passivated porous Si and oxidized Si nanocrystals*, S. Schuppler, S. L. Friedman, M. A. Marcus, D. L. Adler, Y. H. Xie, F. M. Ross, T. D. Harris, W. L. Brown, Y. J. Chabal, P. J. Szajowski, E. E. Chaban, L. E. Brus, and P. H. Citrin, Applications of Synchrotron Radiation Techniques to Materials Science Ii **375**, 113 (1995).

149. *Size, shape, and composition of luminescent species in oxidized Si nanocrystals and H-passivated porous Si*, S. Schuppler, S. L. Friedman, M. A. Marcus, D. L. Adler, Y. H. Xie, F. M. Ross, Y. J. Chabal, T. D. Harris, L. E. Brus, W. L. Brown, E. E. Chaban, P. F. Szajowski, S. B. Christman, and P. H. Citrin, Physical Review B **52** (7), 4910 (1995).

148. *Infrared-absorption spectroscopy of Si(100) and Si(111) surfaces after chemomechanical polishing*, G. J. Pietsch, Y. J. Chabal, and G. S. Higashi, Journal of Applied Physics **78** (3), 1650 (1995).

147. *The atomic-scale removal mechanism during chemomechanical polishing of Si(100) and Si(111)*, G. J. Pietsch, Y. J. Chabal, and G. S. Higashi, Surface Science **331**, 395 (1995).

146. *Vibrational characterization and electronic-properties of long range-ordered, ideally hydrogen-terminated Si(111)*, P. Dumas, Y. J. Chabal, R. Gunther, A. T. Ibrahimi, and Y. Petroff, Progress in Surface Science **48** (1-4), 313 (1995).

145. *Characterization of silicon surfaces and interfaces by optical vibrational spectroscopy*, Y. J. Chabal, M. A. Hines, and D. Feijoo, Journal of Vacuum Science & Technology a-Vacuum Surfaces and Films **13** (3), 1719 (1995).

144. *Probing the interface of bonded silicon wafers with infrared absorption spectroscopy*, Y. J. Chabal, D. Feijoo, S. B. Christman, and C. A. Goodwin, Proceedings of the Third International Symposium on Semiconductor Wafer Bonding: Physics and Applications. Electrochem. Soc. **95-97**, 305 (1995).

143. *Real-time in-situ monitoring of surfaces during glow-discharge processing - NH_3 and H_2 plasma passivation of GaAs*, E. S. Aydil, Z. H. Zhou, R. A. Gottscho, and Y. J. Chabal, Journal of Vacuum Science & Technology B **13** (2), 258 (1995).

1994

142. *Low temperature formation of Si(111)7x7 surfaces from chemically prepared H/Si(111)-(1x1) surfaces*, V. Le Thanh, M. Eddrief, C. A. Sebenne, P. Dumas, A. Talebibrahimi, R. Gunther, Y. J. Chabal, and J. Derrien, Applied Physics Letters **64** (24), 3308 (1994).

141. *High-Resolution Photoemission Spectroscopy of Flat and Stepped Non Reconstructed H/Si(111) Surfaces*, A. Talebibrahimi, R. Gunther, P. Dumas, G. Indlekofer, Y. J. Chabal, and Y. Petroff, Journal De Physique Iv **4** (C9), 89 (1994).

140. *Dimensions of luminescent oxidized and porous silicon structures*, S. Schuppler, S. L. Friedman, M. A. Marcus, D. L. Adler, Y. H. Xie, F. M. Ross, T. D. Harris, W. L. Brown, Y. J. Chabal, L. E. Brus, and P. H. Citrin, Physical Review Letters **72** (16), 2648 (1994).

139. *Chemomechanical polishing of silicon: surface termination and mechanism of removal*, G. J. Pietsch, G. S. Higashi, and Y. J. Chabal, Applied Physics Letters **64** (23), 3115 (1994).

138. *Transient vibrational mode renormalization in dipole-coupled adsorbates at surfaces*, K. Kuhnke, A. L. Harris, Y. J. Chabal, P. Jakob, and M. Morin, Journal of Chemical Physics **100** (9), 6896 (1994).

137. *Monohydride structures on chemically prepared silicon surfaces*, P. Jakob, Y. J. Chabal, K. Kuhnke, and S. B. Christman, Surface Science **302** (1-2), 49 (1994).

136. *Low-frequency dynamics of Co/Cu breakdown of Born-Oppenheimer approximation*, C. J. Hirschmugl, Y. J. Chabal, F. M. Hoffmann, and G. P. Williams, Journal of Vacuum Science & Technology a-Vacuum Surfaces and Films **12** (4), 2229 (1994).

135. *Measuring the structure of etched silicon surfaces with Raman spectroscopy*, M. A. Hines, Y. J. Chabal, T. D. Harris, and A. L. Harris, Journal of Chemical Physics **101** (9), 8055 (1994).

134. *Core levels spectroscopy of the Si surfaces*, R. Gunther, A. Taleb-Ibrahimi, K. Hricovini, P. Dumas, Y. Chabal, and Y. Petroff, Form. Semicond. Interfaces, Proc. Int. Conf., 4th, 3 (1994).

133. *Silicon-wafer bonding studied by infrared-absorption spectroscopy*, D. Feijoo, Y. J. Chabal, and S. B. Christman, Applied Physics Letters **65** (20), 2548 (1994).

132. *Spectroscopic characterization of model surfaces: chemically prepared, ideally hydrogen-terminated Si(111)*, Y. J. Chabal and P. Dumas, Physicalia Magazine. **16**, 183 (1994).

131. *Surface vibrational spectroscopies for silicon processing*, Y. J. Chabal, Proceedings of International Conference on Advanced Microelectronic Devices and Processing **S2**, 69 (1994).

130. Y. J. Chabal, Infrared spectroscopy of semiconductor surface vibrations in *Handbook of semiconductors, Volume 2: Optical properties*, edited by M. Balanski (Elsevier Science, Amsterdam, Netherlands, 1994), 187.

129. *Surface chemical reactions at the atomic scale: Gas reactions with semiconductors studied with scanning tunneling microscopy*, R. S. Becker, Y. J. Chabal, G. S. Higashi, and A. J. Becker, Scanning Microscopy, Supplement 7, 1993, 269 (1994).

128. *Real-time monitoring of surface chemistry during plasma processing*, E. S. Aydil, R. A. Gottscho, and Y. J. Chabal, Pure and Applied Chemistry **66** (6), 1381 (1994).

1993

127. *Real-time, in situ monitoring of room-temperature silicon surface cleaning using hydrogen and ammonia plasmas*, Z.-H. Zhou, E. S. Aydil, R. A. Gottscho, Y. J. Chabal, and R. Reif, J. Electrochem. Soc. **140** (11), 3316 (1993).

126. *Real time monitoring of silicon surface cleaning using hydrogen and ammonia plasmas*, Z. H. Zhou, E. S. Aydil, R. A. Gottscho, Y. J. Chabal, and R. Reif, Proceedings - Electrochemical Society **93-21** (Proceedings of the Symposium on Highly Selective Dry Etching and Damage Control, 1993), 35 (1993).

125. *Step relaxation and surface stress at H-terminated vicinal Si(111)*, K. Raghavachari, P. Jakob, and Y. J. Chabal, Chemical Physics Letters **206** (1-4), 156 (1993).

124. *First-principles study of the etching reactions of HF and H2O with Si/SiO2 surfaces*, K. Raghavachari, G. S. Higashi, Y. J. Chabal, and G. W. Trucks, Surface Chemical Cleaning and Passivation for Semiconductor Processing Symposium. Mater. Res. Soc. **315**, 437 (1993).

123. *Interadsorbate vibrational-energy flow on stepped vicinal H/Si(111) surfaces*, M. Morin, K. Kuhnke, P. Jakob, Y. J. Chabal, N. J. Levinos, and A. L. Harris, J. Electron Spectro. Rel. Phenom **64-65**, 11 (1993).

122. *Vibrational energy transfer among adsorbate modes: picosecond dynamics on stepped H/Si(111)*, K. Kuhnke, M. Morin, P. Jakob, N. J. Levinos, Y. J. Chabal, and A. L. Harris, Journal of Chemical Physics **99** (8), 6114 (1993).

121. *Imperfections on the chemically prepared, ideally H-terminated Si(111)-(1x1) surfaces*, P. Jakob, Y. J. Chabal, K. Raghavachari, P. Dumas, and S. B. Christman, Surface Science **285** (3), 251 (1993).

120. *Discrete nature of inhomogeneity on stepped H/Si(111) surfaces: spectroscopic identification of individual terrace sizes*, P. Jakob, Y. J. Chabal, K. Raghavachari, and S. B. Christman, Physical Review B **47** (11), 6839 (1993).

119. *The role of kinks in the Si-H vibrational spectrum of vicinal Si(111)-<-1-12> surfaces*, P. Jakob, Y. J. Chabal, and K. Raghavachari, Journal of Electron Spectroscopy and Related Phenomena **64-65**, 59 (1993).

118. *Electronic structure and its dependence on local order for H/Si(111)-(1x1) surfaces*, K. Hricovini, R. Gunther, P. Thiry, A. Taleb-Ibrahimi, G. Indlekofer, J. E. Bonnet, P. Dumas, Y. Petroff, X. Blase, X. Zhu, S. G. Louie, Y. J. Chabal, and P. A. Thiry, Physical Review Letters **70** (13), 1992 (1993).

117. *Dipole forbidden vibrational-modes for NO and CO on Cu Observed in the Far Ir*, C. J. Hirschmugl, P. Dumas, Y. J. Chabal, F. M. Hoffmann, M. Suhren, and G. P. Williams, J. Electron Spectro. Rel. Phenom. **64-65**, 67 (1993).

116. *Looking up the down staircase - Surface raman-spectroscopy as a probe of adsorbate orientation*, M. A. Hines, T. D. Harris, A. L. Harris, and Y. J. Chabal, J. Electron Spectro. Rel. Phenom. **64-65**, 183 (1993).

115. *Raman studies of steric hindrance and surface relaxation of stepped H-terminated silicon surfaces*, M. A. Hines, Y. J. Chabal, T. D. Harris, and A. L. Harris, Physical Review Letters **71** (14), 2280 (1993).

114. *The Influence of HF, OH and Dissolved O2 in Silicon Surface Chemical Cleaning*, G. S. Higashi, Y. J. Chabal, K. Raghavachari, R. S. Becker, M. P. Green, K. Hanson, T. Boone, J. H. Eisenberg, S. F. Shive, G. N. DiBelo, and K. L. Fulford, Proceedings of the Fourth international Symposium on ULSI scientific technology, 23 (1993).

113. G. S. Higashi and Y. J. Chabal, Silicon surface chemical composition and morphology in *Handbook of semiconductor wafer cleaning technology. Science, technology and applications*, edited by W. Kern (Noyes publications, East Windsor, 1993), 433.

112. *Enhanced cohesion of photo-oxygenated fullerene films: a new opportunity for lithography*, A. F. Hebard, C. B. Eom, R. M. Fleming, Y. J. Chabal, A. J. Muller, S. H. Glarum, G. J. Pietsch, R. C. Haddon, A. M. Mujsce, M. A. Paczkowski, and G. P. Kochanski, Appl. Phys. A **57** (3), 299 (1993).

111. *Vibrational-energy flow at stepped H/Si(111) - Phonons, dipoles and screening*, A. L. Harris, K. Kuhnke, M. Morin, P. Jakob, N. J. Levinos, and Y. J. Chabal, Faraday Discuss. **96**, 217 (1993).

110. *Vibrational properties of H/Si(111)-(1x1) surfaces: infrared absorption and electron energy loss spectroscopic studies*, P. Dumas, Y. J. Chabal, and P. Jakob, Applied Surface Science **66(1-4)**, 580 (1993).

109. *Infrared spectroscopy of H-terminated silicon surfaces*, Y. J. Chabal, A. L. Harris, K. Raghavachari, and J. C. Tully, International Journal of Modern Physics B **7** (4), 1031 (1993).

108. *Infrared spectroscopy of semiconductor surfaces: H-terminated silicon surfaces*, Y. J. Chabal, Journal of Molecular Structure **292**, 65 (1993).

107. Y. J. Chabal, Studies of semiconductor surfaces: vibrational spectroscopy of adsorbates in *Internal reflection spectroscopy: theory and applications*, edited by F. M. Mirabella (Marcel Dekker, New York, 1993), 791.

106. *Surface chemical reactions studied with scanning tunneling microscopy*, R. S. Becker, A. J. Becker, G. S. Higashi, and Y. J. Chabal, Scanning microscopy suppl. **7**, 269 (1993).

105. *Real time in situ monitoring of surface reactions during plasma passivation of GaAs*, E. S. Aydil, Z. Zhen-Hong, R. A. Gottscho, and Y. J. Chabal, ECS proceedings (1993).

104. *Real time in situ monitoring of surface reactions during plasma passivation of GaAs*, E. S. Aydil, K. Giapis, Z. Zhen-Hong, J. A. Gregus, R. A. Gottscho, and Y. J. Chabal, Applied Physics Letters **62** (24), 3156 (1993).

1992

103. *Vibrational energy transfer on hydrogen-terminated vicinal Si(111) surfaces: interadsorbate energy flow*, M. Morin, P. Jakob, N. J. Levinos, Y. J. Chabal, and A. L. Harris, Journal of Chemical Physics **96** (8), 6203 (1992).

102. *Kinetic model of the chemical etching of Si(111) surfaces by buffered HF solutions*, P. Jakob, Y. J. Chabal, K. Raghavachari, R. S. Becker, and A. J. Becker, Surface Science **275** (3), 407 (1992).

101. *Morphology of hydrogen-terminated Si(111) and Si(100) surfaces upon etching in HF and buffered-HF solutions*, P. Dumas, Y. J. Chabal, and P. Jakob, Surface Science **269-270**, 867 (1992).

100. *Electron energy loss spectroscopy of H-terminated Si(111) and Si(100) prepared by chemical etching*, P. Dumas and Y. J. Chabal, Journal of Vaccum Science & Technology **10(4)**, 2160 (1992).

99. *Etching of silicon (111) and (100) surfaces in HF solutions: H-termination, atomic structure and overall morphology*, Y. J. Chabal, Chemical Surface Preparation, Passivation and Cleaning for Semiconductor Growth and Processing Symposium. Mater. Res. Soc. **259**, 349 (1992).

98. *Inverse-photoemission spectroscopy of the unreconstructed, ideally H-terminated Si(111) surface*, S. Bouzidi, F. Coletti, J. M. Debever, P. A. Thiry, P. Dumas, and Y. J. Chabal, Physical Review B **45** (3), 1187 (1992).

97. *Conduction-bands asymmetry of Si(111) revealed by inverse photoemission*, S. Bouzidi, F. Coletti, J. M. Debever, P. A. Thiry, P. Dumas, and Y. J. Chabal, Surface Science **269-270**, 829 (1992).

1991

96. *Comment on 'Mechanism of HF etching of silicon surfaces: a theoretical understanding of hydrogen passivation' (and reply)*, E. Sacher, A. Yelon, G. W. Trucks, K. Raghavachari, G. S. Higashi, and Y. J. Chabal, Physical Review Letters **66** (12), 1647 (1991).

95. *Phase transitions, surface structures, and adsorbate bonding in the H/Mo(100) chemisorption system*, J. A. Prybyla, P. J. Estrup, and Y. J. Chabal, Journal of Chemical Physics **94** (9), 6274 (1991).

94. *Influence of silicon oxide on the morphology of HF-etched Si(111) surfaces: thermal versus chemical oxide*, P. Jakob, P. Dumas, and Y. J. Chabal, Applied Physics Letters **59** (23), 2968 (1991).

93. *Lineshape analysis of the Si-H stretching mode of the ideally H-terminated Si(111) surface: the role of dynamical dipole coupling*, P. Jakob, Y. J. Chabal, and K. Raghavachari, Chemical Physics Letters **187** (3), 325 (1991).

92. *Chemical etching of vicinal Si(111): dependence of the surface structure and the hydrogen termination on the pH of the etching solutions*, P. Jakob and Y. J. Chabal, Journal of Chemical Physics **95** (4), 2897 (1991).

91. *Comparison of Si(100) surfaces prepared using aqueous solutions of NH_4F versus HF*, G. S. Higashi, R. S. Becker, Y. J. Chabal, and A. J. Becker, Applied Physics Letters **58** (15), 1656 (1991).

90. *Amortissement des vibrations d'atomes adsorbes sur une surface*, P. Guyot-Sionnest, P. Dumas, and Y. J. Chabal, Le courrier du CNRS (Images de la Physique) **77**, 50 (1991).

89. *High-resolution surface infrared spectroscopy: H vibration on a Si(111) surface*, P. Dumas and Y. J. Chabal, FT-IR spectral lines **12**, 6 (1991).

88. *Electron-energy-loss characterization of the H-terminated Si(111) and Si(100) surfaces obtained by etching in NH_4F*, P. Dumas and Y. J. Chabal, Chemical Physics Letters **181** (6), 537 (1991).

87. *Vibrational dynamics of the ideally H-terminated Si(111) surface*, Y. J. Chabal, P. Dumas, P. Guyot-Sionnest, and G. S. Higashi, Surface Science **242** (1-3), 524 (1991).

86. *Infrared spectroscopy of hydrogen on silicon surfaces*, Y. J. Chabal, Physica B **170** (1-4), 447 (1991).

1990

85. *Oxidation of GaAs(110) with NO_2: infrared spectroscopy*, A. vom Felde, K. Kern, G. S. Higashi, Y. J. Chabal, S. B. Christman, C. C. Bahr, and M. J. Cardillo, Physical Review B **42** (8), 5240 (1990).

84. *Monitoring low-coverage surface chemistry with bulk transport: NO_2 dissociation and oxygen penetration at a GaAs(110) surface*, A. vom Felde, C. Bahr, K. Kern, G. S. Higashi, Y. J. Chabal, and M. J. Cardillo, Physical Review B **42** (10), 6865 (1990).

83. *Mechanism of HF etching of silicon surfaces: a theoretical understanding of hydrogen passivation*, G. W. Trucks, K. Raghavachari, G. S. Higashi, and Y. J. Chabal, Physical Review Letters **65** (4), 504 (1990).

82. *CO diffusion on Pt(111) with time-resolved infrared-pulsed molecular beam methods: critical tests and analysis*, J. E. Reutt-Robey, D. J. Doren, Y. J. Chabal, and S. B. Christman, Journal of Chemical Physics **93** (12), 9113 (1990).

81. *Low temperature adsorption and reaction of NO on GaAs(110)*, K. Kern, Y. J. Chabal, G. S. Higashi, A. vom Felde, and M. J. Cardillo, Chemical Physics Letters **168** (2), 203 (1990).

80. *Adsorbate-substrate resonant interactions observed for CO on Cu(100) in the far infrared*, C. J. Hirschmugl, G. P. Williams, F. M. Hoffmann, and Y. J. Chabal, Physical Review Letters **65** (4), 480 (1990).

79. *Adsorbate-substrate resonant interactions observed for CO on Cu(100) and (111) in the far-IR using synchrotron radiation*, C. J. Hirschmug, G. P. Williams, F. M. Hoffmann, and Y. J. Chabal, J. Electron Spectro. Rel. Phenom. **54-55**, 109 (1990).

78. *Ideal hydrogen termination of the Si(111) surface*, G. S. Higashi, Y. J. Chabal, G. W. Trucks, and K. Raghavachari, Applied Physics Letters **56** (7), 656 (1990).

77. *Lifetime of an adsorbate-substrate vibration: H on Si(111)*, P. Guyot-Sionnest, P. Dumas, Y. J. Chabal, and G. S. Higashi, Physical Review Letters **64** (18), 2156 (1990).

76. *Lifetime of an adsorbate-substrate vibration measured by sum frequency generation: H on Si(111)*, P. Guyot-Sionnest, P. Dumas, and Y. J. Chabal, J. Electron Spectr. Rel Phenom **54-55**, 27 (1990).

75. *Coupling of an adsorbate vibration to a substrate surface phonon: H on Si(111)*, P. Dumas, Y. J. Chabal, and G. S. Higashi, Physical Review Letters **65** (9), 1124 (1990).

74. *Lineshape of the Si-H stretching vibration for the ideally H-terminated Si(111)1x1*, P. Dumas, Y. J. Chabal, and G. S. Higashi, J. Electron Spectr. Rel. Phenom. **54-55**, 103 (1990).

73. *Inelastic helium scattering measurements of surface phonons in hydrogen-terminated Si(111) (1x1)*, R. B. Doak, Y. J. Chabal, G. S. Higashi, and P. Dumas, J. Electron Spectr. Rel. Phenom. **54-55**, 291 (1990).

72. *Molecular diffusion on metal surfaces: time-resolved infrared spectroscopy and other techniques*, Y. J. Chabal, Vacuum **41** (1-3), 70 (1990).

71. *Adsorption states and orientation of n-alkyl anhydride molecules on oxidized aluminium surface*, K. Berrada, P. Dumas, Y. J. Chabal, and P. Dubot, J. Electron Spectr. Rel. Phenom. **54-55**, 1153 (1990).

70. *Atomic scale conversion of clean Si(111):H-1x1 to Si(111)-2x1 by electron-stimulated desorption*, R. S. Becker, G. S. Higashi, Y. J. Chabal, and A. J. Becker, Physical Review Letters **65** (15), 1917 (1990).

1989

69. *Coherence effects in long-wavelength infrared synchrotron radiation emission*, G. P. Williams, C. J. Hirschmugl, E. M. Kneedler, P. Z. Takacs, M. Shleifer, Y. J. Chabal, and F. M. Hoffmann, Physical Review Letters **62** (3), 261 (1989).

68. *Infrared synchrotron radiation measurements at Brookhaven using a Nicolet 20F spectrometer*, G. P. Williams, C. J. Hirschmug, E. A. Sullivan, E. M. Kneedler, Y. J. Chabal, F. M. Hoffmann, and K. D. Moeller, FT-IR spectral lines **10**, 5 (1989).

67. *CO diffusion on Pt(111) by time-resolved surface infrared spectroscopy*, J. E. Reutt-Robey, Y. J. Chabal, D. J. Doren, and S. B. Christman, Journal of Vaccum Science & Technology **7(3)**, 2227 (1989).

66. *Infrared spectroscopy of Si(111) and Si(100) surfaces after HF treatment: hydrogen termination and surface morphology*, Y. J. Chabal, G. S. Higashi, K. Raghavachari, and V. A. Burrows, Journal of Vaccum Science & Technology **7(3)**, 2104 (1989).

65. *Structure and kinetics of molecules at surfaces*, Y. J. Chabal, 7th International Conference on Fourier transform spectroscopy **1145**, 34 (1989).

64. Y. Chabal, G. S. Higashi, and K. Raghavachari, in *Materials Research Society: Chemical Perspectives of Microelectronic Materials* (1989), Vol. 131, pp. 191.

1988

63. *Characteristics and performance of the National Synchrotron Light Source infra-red beamline*, G. P. Williams, C. J. Hirschmugl, D. P. Siddons, E. A. Sullivan, K. D. Moeller, P. Petrone, E. Angelides, Y. J. Chabal, and F. M. Hoffmann, Proceedings of Spie - the International Society for Optical Engineering, Thirteenth International Conference on Infrared and Millimeter Waves. **1039**, 263 (1988).

62. *Laser-assisted deposition of Fe and W: photodecomposition of Fe(CO)5 and W(CO)6 on Si(111)-(7x7)*, J. R. Swanson, C. M. Friend, and Y. J. Chabal, Laser and Particle-Beam Chemical Processing for Microelectronics. Symposium. Mater. Res. Soc. **101**, 201 (1988).

61. *Microscopic CO diffusion on a Pt (111) surface by time-resolved infrared spectroscopy*, J. E. Reutt-Robey, D. J. Doren, Y. J. Chabal, and S. B. Christman, Physical Review Letters **61** (24), 2778 (1988).

60. *Hydrogen phonon spectra on Pt(111) at T=100 and 160 K*, J. E. Reutt, Y. J. Chabal, and S. B. Christman, Journal of Vaccum Science & Technology **6** (3), 816 (1988).

59. *Coupling of H vibration to substrate electronic states in Mo(100)-p(1x1)H and W(100)-p(1x1)H; example of strong breakdown of adiabaticity*, J. E. Reutt, Y. J. Chabal, and S. B. Christman, Physical Review B **38** (5), 3112 (1988).

58. *Review of semiconductor interfaces: formation and properties*, Y. J. Chabal, Opt. Engr **27**, SR 153 (1988).

57. *Optical spectroscopy at surfaces*, Y. J. Chabal, Science **239**, G195 (1988).

56. Y. J. Chabal, Infrared spectroscopy of semiconductor surfaces in *Chemistry and physics of solid surfaces VII*, edited by R. Vanselow and R.F. Howe (1988), 108.

55. *Surface infrared spectroscopy*, Y. J. Chabal, Surface Science Reports **8** (5-7), 211 (1988).

54. *Chemistry, structures, dynamics and kinetics of adsorbates on surfaces by Fourier transform infrared spectroscopy*, Y. J. Chabal, Journal of the Optical Society of America **172**, 471 (1988).

53. *Infrared spectroscopy of Si(111) surfaces after HF treatment:Hydrogen termination and surface morphology*, V. A. Burrows, Y. J. Chabal, G. S. Higashi, K. Raghavachari, and S. B. Christman, Applied Physics Letters **53** (11), 998 (1988).

1987

52. *Laser-assisted deposition of iron on Si(111)-(7x7): the mechanism and energetics of $Fe(CO)_5$ decomposition*, J. R. Swanson, C. M. Friend, and Y. J. Chabal, Journal of Chemical Physics **87** (8), 5028 (1987).

51. *Deposition of iron on Si(111)-(7x7): photo- and electron-assisted decomposition of Fe(CO)5*, J. R. Swanson, C. M. Friend, and Y. J. Chabal, Photon, Beam, and Plasma Stimulated Chemical Processes at Surfaces. Symposium. Mater. Res. Soc., 559 (1987).

50. *Hydrogen phonon spectra on transition metal surfaces: infrared reflection adsorption investigations of Mo(100), W(100) and Pt(111)*, J. E. Reutt, Y. J. Chabal, and S. B. Christman, J. Electron Spectro. Rel. Phenom **44** (1), 325 (1987).

49. *Reconstructive phase transitions and effective adsorbate-adsorbate interactions: H/Mo(100) and H/W(100)*, J. A. Prybyla, P. J. Estrup, S. C. Ying, Y. J. Chabal, and S. B. Christman, Physical Review Letters **58** (18), 1877 (1987).

48. *Reconstruction, adsorbate bonding, and desorption kinetics of H/Mo(100)*, J. A. Prybyla, P. J. Estrup, and Y. J. Chabal, Journal of Vacuum Science & Technology A **5** (4), 791 (1987).

47. *Studies of self-sustained reaction rate oscillations: III The carbon model*, N. A. Collins, S. Sundaresan, and Y. J. Chabal, Surface Science **180** (1), 136 (1987).

46. *Molecular hydrogen in a-Si:H*, Y. J. Chabal and C. K. N. Patel, Reviews of Modern Physics **59** (4), 835 (1987).

45. Y. J. Chabal, S. B. Christman, V. A. Burrows, N. A. Collins, and S. Sundaresan, Self-sustained kinetics oscillations in the catalytic CO oxidation on platinum in *Kinetics of interface reactions*, edited by M. Grunze and J. Kreuzer (Springer Verlag, Berlin, 1987), 285.

44. *Hydrogen-induced reconstruction of W(100) and Mo(100) by surface infrared spectroscopy*, Y. J. Chabal, S. B. Christman, J. J. Arrecis, J. A. Prybyla, and P. J. Estrup, J. Electron Spectro. Rel. Phenom **44** (1), 17 (1987).

43. Y. J. Chabal, Vibrational properties at semiconductor surfaces and interfaces in *Semiconductor Interfaces: Formation and Properties.*, edited by G. Le Lay, J. Derrien, and N. Boccara (Springer-Verlag, Berlin, West Germany, 1987), 301.

42. *Properties of adsorbed atoms and molecules by surface infrared spectroscopy*, Y. J. Chabal, Journal of the Electrochemical Society **87-88**, 1 (1987).

41. *Studies on self sustained reaction-rate oscillations: II the rate of carbon and oxides in the oscillatory oxidation of carbon monoxide on platinum*, V. A. Burrows, S. Sundaresan, Y. J. Chabal, and S. B. Christman, Surface Science **180** (1), 110 (1987).

40. *Real-time study of self-sustained oscillations in the Co oxidation rate on Pt*, V. A. Burrows, S. Sundaresan, and Y. J. Chabal, Journal of Vaccum Science & Technology **5** (4), 801 (1987).

1986

39. *Dynamics of H chemisorbed on Si(100) and W(100) studied by high-resolution infrared spectroscopy*, Y. J. Chabal, Journal of Electron Spectroscopy Related Phenom. **38**, 159 (1986).

38. *High-resolution infrared spectroscopy of adsorbates on semiconductor surfaces: hydrogen on Si(100) and Ge(100)*, Y. J. Chabal, Surface Science **168** (1-3), 594 (1986).

37. *Infrared absorption measurement of the overtone of the wagging mode of hydrogen on W(100)*, Y. J. Chabal, Journal of Vaccum Science & Technology **4** (3), 1324 (1986).

36. *H-induced structural phase transitions on W(100) by surface infrared spectroscopy*, J. J. Arrecis, Y. J. Chabal, and S. B. Christman, Physical Review B **33** (12), 7906 (1986).

1985

35. *Infrared linewidths and vibrational lifetimes at surfaces: H on Si(100)*, J. C. Tully, Y. J. Chabal, K. Raghavachari, J. M. Bowman, and R. R. Lucchese, Physical Review B **31** (2), 1184 (1985).

34. *Linewidth of H chemisorbed on W(100): an infrared study*, D. M. Riffe, L. M. Hanssen, A. J. Sievers, Y. J. Chabal, and S. B. Christman, Surface Science **161** (1), L559 (1985).

33. *New ordered structure for the H-saturated Si(100) surface: the (3x1) phase*, Y. J. Chabal and K. Raghavachari, Physical Review Letters **54** (10), 1055 (1985).

32. *Effects of high pressure molecular hydrogen in a-Si:H*, Y. J. Chabal and C. K. N. Patel, J. Non-Crystal. Solids **77-78** (1), 201 (1985).

31. *Evidence for high pressure gaseous molecular hydrogen in a-Si:H. An infrared study*, Y. J. Chabal and C. K. N. Patel, Proceedings of the 17th International Conference on the Physics of Semiconductors, 909 (1985).

30. Y. J. Chabal, High-resolution infrared spectroscopy and surface structure in *The structure of surfaces*, edited by M. A. Van Hove and S. Y. Tong (Springer Verlag (Springer Series in Surf. Sci), New York, 1985), 70.

29. *Infrared study of the chemisorption of hydrogen and water on vicinal Si(100)2x1 surfaces*, Y. J. Chabal, Journal of Vaccum Science & Technology A **3** (3), 1448 (1985).

28. *Electronic damping of hydrogen vibration on the W(100) surface*, Y. J. Chabal, Physical Review Letters **55** (8), 845 (1985).

27. *Studies on self-sustained reaction-rate oscillations. I. Real-time surface infrared measurements during oscillatory oxidation of carbon monoxide on platinum*, V. A. Burrows, S. Sundaresan, Y. J. Chabal, and S. B. Christman, Surface Science **160** (1), 122 (1985).

1984

26. *IR spectroscopy with surface electromagnetic waves*, A. J. Sievers, Z. Schlesinger, and Y. J. Chabal, Journal de Physique (Paris) **45** (C5), 167 (1984).

25. *Surface infrared study of Si(100)-(2x1)H*, Y. J. Chabal and K. Raghavachari, Physical Review Letters **53** (3), 282 (1984).

24. *Infrared absorption in a-Si:H: first observation of gaseous molecular H_2 and Si-H overtone*, Y. J. Chabal and C. K. N. Patel, Physical Review Letters **53** (2), 210 (1984).

23. *Solid hydrogen in amorphous silicon: phase transition*, Y. J. Chabal and C. K. N. Patel, Physical Review Letters **53** (18), 1771 (1984).

22. *Infrared absorption in a-Si:H: first observation of the gas-solid transition of occluded molecular H_2*, Y. J. Chabal and C. K. N. Patel, Physica B & C **126** (1-3), 461 (1984).

21. *Evidence of dissociation of water on the Si (100) 2x1 surface*, Y. J. Chabal and S. B. Christman, Physical Review B **29** (12), 6974 (1984).

20. *Hydride formation on the Si(100):H_2O surface*, Y. J. Chabal, Physical Review B **29** (6), 3677 (1984).

1983

19. *Sample manipulator for operation between 20 and 2000K in ultrahigh vacuum*, E. E. Chaban and Y. J. Chabal, Review of Scientific Instruments **54** (8), 1031 (1983).

18. *Hydrogen chemisorption on Si(111)-(7x7) and -(1x1) surfaces. A comparative infrared study*, Y. J. Chabal, G. S. Higashi, and S. B. Christman, Physical Review B **28** (8), 4472 (1983).

17. Y. J. Chabal, S. B. Christman, E. E. Chaban, and M. T. Yin, presented at the Proceedings of the 29th National Symposium of the American Vacuum Society., Baltimore, MD, USA, 1983 (unpublished).

16. *High resolution infrared study of hydrogen chemisorbed on Si (100)*, Y. J. Chabal, E. E. Chaban, and S. B. Christman, J. Electron Spectro. Rel. Phenom. **29**, 35 (1983).

15. *Hydrogen vibration on Si(111)7x7: evidence for a unique chemisorption site*, Y. J. Chabal, Physical Review Letters **50** (23), 1850 (1983).

1982

14. *Chemical bonding at the Si-metal interface:Si-Ni and Si-Cr*, A. Franciosi, J. H. Weaver, D. G. O'Neill, Y. J. Chabal, J. E. Rowe, J. M. Poate, O. Bisi, and C. Calandra, Journal of Vacuum Science & Technology A **21(2)**, 624 (1982).

13. *Stoichiometry and structural disorder effects on the electronic structure of Ni and Pd silicides*, Y. J. Chabal, J. E. Rowe, J. M. Poate, A. Franciosi, and J. H. Weaver, Physical Review B **26** (6), 2748 (1982).

12. *Laser quenched and impurity induced metastable Si (111) 1x1 surfaces*, Y. J. Chabal, J. E. Rowe, and S. B. Christman, journal of vacuum Science & Technology **20** (3), 763 (1982).

11. *Photoemission and band-structure results for $NiSi_2$*, Y. J. Chabal, D. R. Hamann, J. E. Rowe, and M. Schluter, Physical Review B **25** (12), 7598 (1982).

10. *Infrared study of hydrogen chemisorbed on W(100) by surface-electromagnetic-wave spectroscopy*, Y. J. Chabal and A. J. Sievers, Physical Review B **24** (6), 2921 (1981).

1981

9. *Buckling reconstruction on laser-annealed Si(111) surfaces*, Y. J. Chabal, J. E. Rowe, and D. A. Zwemer, Physical Review Letters **46** (9), 600 (1981).

8. *Nature of vicinal laser-annealed Si(111) surfaces*, Y. J. Chabal, J. E. Rowe, and S. B. Christman, Physical Review B **24** (6), 3303 (1981).

7. *Si(111): Ni surface studies by AES, UPS, LEED, and ion scattering*, Y. J. Chabal, R. J. Culbertson, L. C. Feldman, and J. E. Rowe, journal of vacuum Science & Technology **18** (3), 880 (1981).

6. *High frequency modulation interferometric study of electron stimulated infrared (IR) luminescence in InSb*, Y. J. Chabal, D. L. Allara, D. Teicher, and J. E. Rowe, Proceedings of Spie - the International Society for Optical Engineering **289**, 82 (1981).

1975 -1980

5. *High-resolution infrared study of hydrogen (1x1) on tungsten (100)*, Y. J. Chabal and A. J. Sievers, Physical Review Letters **44** (14), 944 (1980).

4. *Evidence for a disordered V19x V19 structure for the quenched clean Si(111) surface*, Y. J. Chabal and J. E. Rowe, Proceedings of an International Conference on Ordering in Two Dimensions, 251 (1980).

3. *Surface electromagnetic wave launching at the edge of a metal film*, Y. J. Chabal and A. J. Sievers, Applied Physics Letters **32** (2), 90 (1978).

2. *IR study of molecules adsorbed on metal surfaces by surface electromagnetic wave spectroscopy*, Y. J. Chabal and A. J. Sievers, Journal of Vaccum Science & Technology **15** (2), 638 (1978).

1. *Temperature dependence of the far-infrared absorption spectrum in amorphous dielectrics*, K. K. Mon, Y. J. Chabal, and A. J. Sievers, Physical Review Letters **35** (20), 1352 (1975).

- **Books, edited or co-edited**

1. **Fundamental Aspects of Silicon Oxidation**, Y.J. Chabal (editor), Springer Series in Materials Science (Series editors: R. Hull, R.M. Osgood, H. Sakaki, A. Zunger), Springer-Verlag, Berlin (2001).

2. **Biointerface Characterization by Advanced Infrared Spectroscopy,** C.M. Pradier and Y.J. Chabal (editors), Elsevier, Amsterdam (Netherlands) (2011)

- **Book chapters in following books (<2007):**

Semiconductor Interfaces: Formation and Properties (Springer, 1987)
Internal Reflection Spectroscopy: Theory and Applications (Dekker)
Handbook of Silicon Wafer Cleaning Technology (Noyes, 1993)
Handbook of Semiconductors: Optical Properties (Elsevier, 1994)
Properties of Crystalline Silicon EMIS Datareviews #.20 (1999)
Handbook of Vibrational Spectroscopy (Wiley, 2001)
Fundamental Aspects of Silicon Oxidation (Springer, 2001)

- **Chapters in books** (>2007):

1) *Infrared analysis of biomolecule attachment of functionalized silicon surfaces,* N.A. Lapin, O. Seitz and Y.J. Chabal, Chapt 3 in *Biointerface Characterization by Advanced Infrared Spectroscopy***,** C.M. Pradier and Y.J. Chabal (editors), Elsevier, Amsterdam (Netherlands) (2011)

2) *Formation of organic monolayers through wet chemistry,* D. Aureau and Y.J. Chabal, Chapt. 11 in *Functionalization of Semiconductor Surfaces* (F. Tao and S. L. Bernasek, editors), VCH-Wiley, Amsterdam (2012)

3) Sioncke, S., Y.J. Chabal, and M.M. Frank, *Germanium Surface Conditioning*, in *Handbook of Cleaning for Semiconductor Manufacturing: Fundamentals and Applications*, K.A. Reinhardt and R.F. Reidy, Editors. 2011, Scrivener Publishing and John Wiley and Sons. p. 429.

4) *Surface and Interface Chemistry for Gate Stacks on Silicon,* M.M. Frank and Y.J. Chabal, Chapter 6 in *Into the Nano Era,* H.R. Huff (editor), Springer Series in Materials Science, R. Hull, R.M. Osgood, J. Parisi and H. Warlimont (editors) (2009).

5) *Passivation and Characterization of Germanium Surfaces,* S.R. Amy, and Y.J. Chabal, Chapter 4 in *Advanced Gate Stacks for High-Mobility Semiconductors,* A.Dimoulas, E. Gusev, P.C. McIntyre, M. Heyns (editors), Springer Series in Advanced Microelectronics (2007);

6) *Surface Chemical Composition and Morphology,* Y.J. Chabal, G.S. Higashi, and R.J. Small, Chapter 9 in *Handbook of Silicon Wafer Cleaning Technology (2nd Edition)*, K.A. Reinhardt and W. Kern (editors), William Andrew, Norwich, NY (2007);

7) *Formation of Organic Monolayers Through Wet Chemistry*, D. Aureau and Y.J. Chabal, Y.J., in *Functionalization of Semiconductor Surfaces*, edited by Steven L. Bernasek and Franklin Tao (Editors), John Wiley and Sons, NY, USA, (2012), pp. 301.

Invited Presentations:

- **Plenary Talk**

1. "The nature of chemically derived graphene: Thermal reduction of graphene oxide", **Yves J. Chabal**, M. Acik, *2011 ACSIN 11th International Conference on Atomically Controlled Surfaces, Interfaces and Nanostructures, St. Petersburg, Russia Oct 2-4, 2011.*

2. "Chemical functionalization of oxide-free silicon surfaces", **Yves J. Chabal**, 86th ACS Colloid and Surface Science Symposium; Baltimore, June 10-13, 2012.

- **Invited talks** (since 1990 only)

244. "*Controlled Assembly of Ordered Quantum Dot Solids for Energy Transfer based Optoelectronic Applications*," S. M. Rupich, Y. Gartstein, A. V. Malko, Y. J. Chabal, XXV International Materials Research Congress, Cancun, Mexico, Aug. 2016

243. "*Chemical Functionalization of Silicon Surfaces for Microelectronic and Optoelectronic Applications*," S. M. Rupich, Y. J. Chabal, 47th Silicon Symposium, Portland, OR, June 2016

242. "*Towards hybrid energetic nanolaminates based on the coupling of Al/Cu binary systems with Al/CuO thermite systems",* L. Marin Mercado, L. Salvagnac, V. Conedera, B. Warrot-Fonrose, C. Tenailleau, Y. Chabal, A. Esteve, C. Rossi, Gordon Research Conference on Energetic Materials, Stowe USA, 5-10 June 2016.

241. *"Molecular Interactions and Reactions in Metal Organic Framework materials",* Kui Tan, Erika Fuentes, Sebastian Zuluaga, Qihan Gong, Jing Li, Timo Thonhauser and Yves J. Chabal, Departmental Seminar, University of Iowa at Ames, IA, April 21, 2016.

240. "*ALD and surface functionalization for sensing and photovoltaic applications*", Yves Chabal, Seminar series at the Institute of Materials Science & Engineering, University of Washington in St Louis, MO, April 15th, 2016.

239. "Molecular Interactions and Reactions in Metal Organic Framework materials", Kui Tan, Erika Fuentes, Sebastian Zuluaga, Qihan Gong, Jing Li, Timo Thonhauser and Yves J. Chabal, Inorganic-Electrochemistry Seminar, California Institute of Technology, Pasadena, CA., April 4, 2016.

238. "*Chemistry in Confined Environments: Water Reaction in MOF-74*", Kui Tan, Erika Fuentes, Sebastian Zuluaga, Qihan Gong, Jing Li, Timo Thonhauser and Yves J. Chabal, 251st American Chemical Society National Meeting & Exposition, San Diego, CA., March 13-17, 2016.

237. " *Chemistry in confined environments: water in MOF-74*", Kui Tan, Erika Fuentes, Qihan Gong, Sebatian Zuluaga, Jing Li, Timo Thonhauser, and Yves J. Chabal, DOE-BES Synthesis and Processing Science Principal Investigators' Meeting, Gaithersburg, MD, Nov. 2-4, 2015.

236. "*Etching and Chemical Functionalization of Silicon Nitride Surfaces for Selective Deposition* ", International Conference on Atomic Layer Deposition, Li-Hong Liu, Tatiana Peixoto, Wilfredo Cabrera, Don Dick, Jean-François Veyan, David J. Michalak, Rami Hourani, Mathew D. Halls, Sidharam P. Pujar, Han Zuilhof, Yves J. Chabal, AVS 62nd International Symposium & Exhibition, San Jose, CA, Oct. 18-23, 2015.

235. "*Surface chemical functionalization of advanced materials*", Y.J. Chabal, Keynote presentation at the Materials Characterization Workshop, University of Delaware, Newark, DE, August 25-27, 2015.

234. "*Surface chemical functionalization of advanced materials*" Yves J. Chabal, AVS Texas Chapter, Dallas, TX, Aug. 5-6, 2015.

233. "*Mechanistic studies of oxide and nitride deposition by in situ Infrared spectroscopy*",Abraham Vega, Luis Fabián Peña-Orduña, Yuzhi Gao, Charith Nanayakkara, Wilfredo Cabrera, Don Dick, Mathew D. Halls and Yves J. Chabal, 15th international conference on Atomic Layer Deposition, Portland, OR, June 28-July 1, 2015.

232. "*Chemical nature and control of InP/Al_2O_3 and $InGaAs/Hf_2O$ interfaces*", W. Cabrera and Y.J. Chabal, 227th Electrochemical Society Meeting, Chicago, IL, May 24-28, 2015.

231. "*Chemical functionalization of advanced materials*", Y.J. Chabal, Plenary talk for the Regroupement Québécois sur les Matériaux de Pointe Montreal, CA, May 14, 2015.

230. "*Interaction of small molecules in Metal Organic Framework materials*", Kui Tan, Erika Fuentes and Yves J. Chabal, Materials Synthesis and Simulations Across Scales Seminar Series, PNNL, February 25, 2015.

229. "*Metrology of selective functionalization of semiconductor, oxide and nitride surfaces*", L.-H. Liu, W. Debenedetti, T. Peixoto, S. Karakaya, N. Shafiq, J.-F. Veyan, D. Michalak, R. Hourani, and Y. J. Chabal, AVS 61st International Symposium & Exhibition, Baltimore, Maryland, November 9-14, 2014.

228. "*Chemical functionalization of semiconductor surfaces for microelectronics, energy and sensing applications*", P. Thissen, O. Seitz, W. DeBenedetti, A. Vega, W. Cabrera, T. Peixoto, W. Peng, and Yves Chabal, Chemistry Colloquium, Indiana University, Bloomington, IN, May 28, 2014.

227. "*Mentoring and coaching Women and URMs in STEM fields*", Y.J. Chabal, Materials Research Society Symposium, San Francisco, CA, April 21-25, 2014.

226. "*Chemical functionalization of semiconductor surfaces for microelectronics, energy and sensing applications*", P. Thissen, O. Seitz, W. DeBenedetti, A. Vega, W. Cabrera, T. Peixoto, W. Peng, and Yves Chabal, IGERT student seminar, Cornell University, Ithaca, NY, April 9, 2014.

225. "*Chemical functionalization of semiconductor surfaces for microelectronics, energy and sensing applications*", P. Thissen, O. Seitz, W. DeBenedetti, A. Vega, W. Cabrera, T. Peixoto, W. Peng, and Yves Chabal, Materials Science Colloquium, University of Illinois at Urbana-Champaign, Urbana, IL, March 31, 2014.

224. "*Atomic Layer Deposition: technological challenges as scientific opportunities*", Yves J. Chabal, Air Products, Carlsbadt, CA, March 10, 2014

223. "*Chemical functionalization of semiconductor surfaces for microelectronics, energy and sensing applications*", *P. Thissen, O. Seitz, W. DeBenedetti, A. Vega, W. Cabrera, T. Peixoto, W. Peng, and Yves Chabal*, Inorganic Chemistry Seminar, University of California San Diego, La Jolla, CA, March 7, 2014.

222. "*Chemical bonding and stability of multilayer graphene oxide layers*", Y.J. Chabal, C. Gong, M. Acik, S. Kim, S. Zhou, Y. Hu, W. de Heer, C. Berger, A. Bongiorno and E. Riedo, SPIE OPTO 2014, San Francisco, CA, Feb. 1-6, 2014.

221. "*Advanced Materials for Energy Harvesting, Storage and Release*", Y.J. Chabal, Energy Summit 2014, Dallas, TX, Jan. 27, 2014

220. "*Atomic Layer Deposition: technological challenges as scientific opportunities*", Yves J. Chabal, Jinhee Kwon, Oliver Seitz, Peter Thissen, Min Dai, Karla Bernal, Wilfredo Cabrera, Tatiana Peixoto, SAFC Hitech, Boston, Dec. 5, 2013.

219. "*Nanoporous materials for gas storage, gas separation and carbon capture*", N, Nijem, K. Tan, Y.J. Chabal, and J. Li, and T. Thonhauser, Second SEMINA Conference, Hermosillo, Mexico, Sept. 19-20, 2013.

218. "*In-situ characterization for atomic layer deposition*", Y.J. Chabal, Technical University of Eindhoven, Eindhoven, Netherlands, June 10, 2013.

217. "*From one-way chemistry to surface structuring: The equilibrium of methanol induced nanopatterning on Si*", Peter Thissen, Ehud Fuchs, Katy Roodenko, Tatiana Peixoto, William DeBenedetti, Ben Batchelor, Dennis Smith, Wolf Gero Schmidt and Yves J. Chabal, 2nd International Conference on Materials for Energy (EnMat II), Karlsruhe (Germany), May 12 - 16, 2013.

216. "*Future of atomic layer deposition: Measurements & analysis of surfaces, nucleation and growth*", Y.J. Chabal, "Future of ALD" DARPA Workshop, Chicago, April 20, 2013.

215. "*Chemical nanopatterning of H-terminated Si(111) surfaces*", P. Thissen, T. Peixoto, W. DeBenedetti, and Yves Chabal, Materials Research Society Symposium, San Francisco, CA, April 1-5, 2013.

214. "*Chemical Functionalization of hydrogen-terminated Silicon Surfaces for Energy and Sensing Applications*", O. Seitz, W. Peng, P. Thissen, L. Caillard, W. De Benedetti, H. Nguyen, Y. Garstein, A. Malko, and Yves Chabal, TMS 2013 Annual meeting & Exibition, San Antonio, TX, March 3-7, 2013

213. "Chemical bonding and stability of multilayer graphene oxide layers", 7th Singapore International Chemistry Conference (SICC-7), Singapore, Dec. 16-19, 2012.

212. "Nature and control of interfacial chemistry in Al/CuO reactive nanolaminate structures", Jinhee Kwon, Jean-François Veyan, Yves J. Chabal, J.M. Ducéré, M. Petrantoni, P. Alphonse, M. Bahrami, Alain Estève and Carole Rossi, MRS Fall Meeting, Boston, MA, Nov. 26-30, 2012.

211. "Chemical functionalization of oxide-free Si(111) surfaces", P. Thissen, O. Seitz, D. Aureau, T. Peixoto, A. Vega, D. Michalak, Yves Chabal, 19th Lloyd B. Thomas Chemistry Scholar Lecture, University of Missouri-Columbia, Nov. 9, 2012.

210. "Materials for Energy", Y.J. Chabal, 19th Lloyd B. Thomas Chemistry Scholar Lecture, University of Missouri-Columbia, Nov. 8, 2012.

209. "Chemical functionalization of hydrogen-terminated Si(111) surfaces", P. Thissen, O. Seitz, D. Aureau, T. Peixoto, A. Vega, D. Michalak, Yves Chabal, Award Talk, AVS 59th International Symposium & Exhibition, Tampa, FL, Oct. 28-Nov. 2, 2012.

208. "Chemical functionalization of hydrogen-terminated Si(111) surfaces", P. Thissen, O. Seitz, D. Aureau, T. Peixoto, A. Vega, Yves Chabal, International conference on Vibrations at Surfaces, Kobe, Japan, Sept. 24-26, 2012.

207. "Fundamental issues in hydrogen storage in metal organic frameworks and complex metal hydrides", N. Nijem, J-F. Veyan, I. Chopra, Y.J. Chabal, 244th ACS Meeting, Philadelphia, Aug. 19-24, 2012.

206. “Activation of surface hydroxyl groups for molecular reactions by modification of H-terminated Si(111) surfaces”, P. Thissen, O. Seitz, T. Peixoto, A. Vega, R.C. Longo, K. Cho, and Yves Chabal, 224th ACS Meeting, Philadelphia, Aug. 19-24, 2012.

205. “Understanding the selective adsorption of CO_2 and hydrocarbon in a flexible Metal Organic Framework “, N. Nijem, T. Thonhauser, J. Li and Y.J. Chabal, 224th ACS Meeting, Philadephia, Aug. 19-24, 2012

204. “Introduction to Nanotechnology: Nanoparticles and Atomic Layer Deposition”, Y. J. Chabal, Lecture series at Huazhong University of Science and Technology, Wuhan, China, June 21-22, 2012.

203. “Science and Technology in the 21st century: From Bell Labs to university research”, Y. J. Chabal, Distinguished Lecture at Huazhong University of Science and Technology, Wuhan, China, June 19, 2012.

202. “Chemical functionalization of oxide-free silicon surfaces”, Yves J. Chabal, The 86th ACS Colloid and Surface Science Symposium; Baltimore, June 10-13, 2012.

201. “Chemical functionalization of silicon surfaces for energy and sensing applications” D. Michalak, D. Aureau, P. Thissen, O. Seitz, T. Peixoto, Louis Caillard, Yves Chabal, Award Talk, Local ACS Chapter, Dallas, TX, May 24, 2012.

200. “Chemical exfoliation and functionalization of graphene and modification of graphene edges and defects:, Muge Acik, Cheng Gong, Daniel Dryer, Cecilia Mattevi, Manish Chhowalla, Christopher Bielawski, and Y.J. Chabal, E-MRS Spring Meeting, Strasbourg, France, May 14-18, 2012.

199. “Chemical functionalization of hydrogen-terminated silicon surfaces for energy and sensing applications”, D. Michalak*, D. Aureau, P. Thissen, O. Seitz, T. Peixoto, Louis Caillard, and Yves Chabal, Materials Science Colloquium, Ecole Polytechnique, May 11, 2012.

198. “Atomic Layer Deposition: technological challenges as scientific opportunities: Activation of surface hydroxyl groups by modification of H-terminated Si(111) surfaces”, Y.J. Chabal, Jinhee Kwon, Oliver Seitz, Peter Thissen, Min Dai, Karla Bernal, Wilfredo Cabrera, Tatiana Peixoto, Colloquium given as part of a Chair "Science des matériaux et surfaces actives" sponsored by St Gobain, St Gobain, Aubervilliers, May 10, 2012.

197. “Spectroscopic evidence for H_2-H_2 interactions in MOFs with unsaturated metal centers: MOF-74”, N. Nijem, J-F. Veyan, Y.J. Chabal, and L. Kong, D.C. Langreth, K. Li, J. Lee, Y. Li, H. Wu, J. Li, Task 22 Workshop (DOE), Heidelberg, Germany, May 7-9, 2012

196. “Graphene and Graphene oxide chemical functionalization”, Y. J. Chabal, The US-Korea Joint Symposium on Nanotechnology, Grapevine, TX, May 1-4, 2012.

195. “Chemical functionalization of hydrogen-terminated silicon surfaces for energy and sensing applications”, **Yves J. Chabal**, Chemistry Colloquium, Portland State University, April 13, 2012.

194. “Hybrid Silicon/colloidal nanocrystals photovoltaic architectures based on radiative and non-radiative energy transfer”, H. M. Nguyen, O. Seitz, W. Peng, L. Caillard, Yu. N. Gartstein, Y. J. Chabal and *A. V. Malko*, MRS Spring 2012, San Francisco, CA, April 8-13, 2012.

194. “Award address: Surface Vibrational Spectroscopy”, **Y. J. Chabal**, The 243rd American Chemical Society meeting, San Diego, CA March 25-29, 2012.

193. "Understanding the preferential adsorption of CO_2 over N_2 in a flexible Metal Organic Framework", Y.J. Chabal, N. Nijem, P. Thissen, Y. Yao, R. Longo, K. Roodenko, H. Wu, Y. Zhao, K. Cho, J. Li, The 243rd American Chemical Society meeting, San Diego, CA March 25-29, 2012.

192. "Understanding preferential adsorption of guest molecules in flexible metal organic framework materials", **Y.J. Chabal**, N. Nijem, P. Thissen, Y. Yao, R. Longo, K. Roodenko, H. Wu, Y. Zhao, K. Cho, J. Li, The 243rd American Chemical Society meeting, San Diego, CA March 25-29, 2012.

191. "Chemical functionalization of hydrogen-terminated silicon surfaces for sensing and energy applications", Y. Chabal, P. Thissen, O. Seitz, T. Peixoto, The 243rd American Chemical Society meeting, San Diego, CA March 25-29, 2012.

191. "Atomic Layer Deposition: technological challenges as scientific opportunities", **Yves J. Chabal**, Jinhee Kwon, Oliver Seitz, Peter Thissen, Min Dai, Karla Bernal, Wilfredo Cabrera, Tatiana Peixoto, Chemistry and Materials Distinguished Lecture, Naval Research Labs, March 14, 2012.

190. "Chemical functionalization of hydrogen-terminated silicon surfaces for microelectronics, biomedical and energy applications", P. Thissen, O. Seitz, D. Aureau, T. Peixoto, **Yves Chabal**, Chemistry Colloquium, Tufts University, March 12, 2012.

189. "Guest host interactions in Metal Organic Frameworks for optimization of gas separation, storage and sensing applications" N. Nijem and Yves J. Chabal, Harvard University, Materials Science seminar series, Boston, MA, February 24, 2012

188. "Infrared studies of graphene oxidation", **Y. J. Chabal**, M. Acik, 2011 AVS 58th International Symposium & Exhibition, Nashville, Tennessee, USA, Oct. 31-Nov. 4, 2011.

187. "Hydrogen storage in complex metal hydrides and metal organic framework materials: challenges and opportunities", Nour Nijem, Irinder Chopra, Jeff Veyan and **Yves J. Chabal**, Materials Science Colloquium, Michigan Technological University, Houghton, MI, Nov. 14, 2011.

186. "Characterization of semiconductor surfaces during surface conditioning and functionalization for microelectronics, biomedical and energy applications", P. Thissen, O. Seitz, D. Aureau, T. Peixoto, **Yves Chabal**, ECS conference, Boston, MA, Oct. 10-14, 2011.

185. "Patterning silicon surfaces by chemical self-assembly for biomedical and energy applications", **Y. J. Chabal**, Physics Colloquium, A&M Commerce, Sept. 1st, 2011.

184. "Molecular hydrogen dissociation on Ti doped Al(111) surfaces." Irinder Singh Chopra, J. F. Veyan, **Y. J. Chabal**, Santanu Chaudhuri, Jason Graetz, IEA Hydrogen Implementing Agreement, Task 22 – Fundamental and applied hydrogen storage materials development, Task 22 IEA HIA Expert Meeting, Copenhagen, Denmark, September 4-8, 2011.

183. "Spectroscopic studies of small molecules in Metal Organic Frameworks (MOFs) ", Nour Nijem, Peter Thissen, and **Y.J. Chabal**, DOE contractors' meeting, Arlington, VA, Sept. 19-21 , 2011.

182. "Spectroscopic Study of small molecules in Metal Organic Frameworks (MOFs)" N. Nijem, and **Y. J. Chabal**, Invited Talk, Adsorption at the nanoscale Workshop, A New Frontier in Fundamental Science and Applications,Columbia, MO ,USA, September 22-24, 2011.

181. "Interaction and thermal stability of oxygen species in graphene oxide and graphene defects", **Yves J. Chabal**, M. Acik, *2011 International Conference on Materials for Advanced Technologies (ICMAT), Suntec, Singapore, June 27-July 2, 2011.*

180. "In-situ surface characterization during thin film growth for microelectronics and energy applications", **Y. J. Chabal**, Materials Colloquium, Applied Materials, Santa Clara, Jan. 31, 2011.

179. "Molecular hydrogen dissociation on Ti-doped aluminum surfaces", I. Chopra, S. Chaudhuri, J-F. Veyan**, Y.J. Chabal**, 3rd DOE Computational Materials and Chemical Science Network on Predictive Modeling of the Growth and Properties of Energy-relevant thin Film and Nanostructures, UT Dallas, TX, Jan. 20-22, 2011.

178. "Role of water and nature of edges during thermal reduction of graphene oxide", M. Acik, C. Mattevi, C. Gong, G. Lee, K. Cho, M. Chhowalla, **Y. J. Chabal**, *2nd International Symposium on Graphene Devices: Technology, Physics and Modeling (Oct. 2010) - Tohoku University, Sendai, Japan.*

175. "Role of water and nature of edges in thermally reduced graphene oxide", **Y. J. Chabal**, M. Acik, *2010 LAAS-CNRS, Toulouse, France, Sept. 2010.*

174. "Novel theoretical and experimental approaches for understanding and optimizing molecule-sorbent interactions in metal organic framework materials", **Y.J. Chabal**, International conference on Fundamental and applied hydrogen storage materials development , Death Valley, CA, April 11-15, 2010

173. "Next Generation Materials for Hydrogen storage", **Y.J. Chabal**, N. Nijem, I. Chopra, J-F. Veyan, Energy Workshop, UT Dallas, May 19-20, 2010

171. "Patterning Silicon Surfaces by Chemical Self-assembly for Biomedical and Energy Applications", **Yves J. Chabal**, Tyndall Lecture Series, Tyndall National Institute, Cork, Ireland, June 3, 2010.

170. "Wet and gas phase chemistry of H-terminated Si surfaces: Patterning silicon surfaces by chemical self-assembly", **Y.J. Chabal**, Telluride Workshop on Semiconductor Surface Chemistry, Telluride, CO, July 26-30, 2010.

169. "Wet and gas phase chemistry of H-terminated Si surfaces: Patterning silicon surfaces by chemical self-assembly and Thermal reduction of graphene oxide", **Y.J. Chabal**, LAAS Colloquium, CNRS Toulouse, France.

168. "Role of Water and Nature of Edges during Thermal Reduction of Graphene Oxide", Muge Acik, Cecilia Mattevi, Cheng Gong, Geunsik Lee, Kyeongjae Cho, Manish Chhowalla, and **Yves J. Chabal**, The International Symposium on Graphene Devices, Tohoku University, Sendai, Japan, Oct. 25-29, 2010

167. " In-situ studies of high-k dielectric on semiconductors and metal films on high-k dielectrics" **Y. J. Chabal**, 3rd International Workshop on high-κ dielectrics on high mobility channel materials, Tsing Hua University, Hsinchu, Taiwan, Jan. 19, 2009.

166. " In-situ studies of high-k dielectric on semiconductors and metal films on high-k dielectrics" **Y. J. Chabal**, Joint AVS and Taiwan Annual Physical Society Meeting on "Beyond Si CMOS", Tapei, Taiwan, Jan. 20-21, 2009.

165. "Hydrogen storage in nanoporous materials", **Y. J. Chabal**, American Physical Society, Pittsburgh, PA March 16-20, 2009. (Davisson-Germer Prize talk)

164. "Hydrogen storage in nanoporous materials", **Y. J. Chabal**, Physics Colloquium, University of Texas at Dallas, March 23, 2009.

163. "Tutorial on Interface formation Mechanisms for deposited Dielectric Layers on Si and High Charge Mobility Substrates", **Y.J. Chabal**, 2009 MRS Spring Meeting, San Francisco, CA, Apr. 13-17, 2009.

162. "Novel Theoretical and Experimental Approaches for Understanding and Optimizing Hydrogen-sorbent Interactions in Metal Organic Framework Materials", Nour Nijem, Jean-Francois Veyan, **Yves J. Chabal**, Kunhao Li, JeongYong Lee, Jing Li, Lingzhu Kong, Valentino R. Cooper, David C. Langreth, Hydrogen storage Contractors' Meeting for DOE- BES, Washington, DC, May 20, 2009.
161. "In situ FTIR studies of thermal annealing of Graphene Oxide", Muge Acik, Geunsik Lee, Cecilia Mattevi, Manish Chhowalla, Kyeongjae Cho, **Yves Chabal**, NRI workshop, Austin, TX, September 16-17, 2009.
160. "Nanoporous mixed-matrix membranes for gas separation", K. J. Balkus, J.P. Ferraris, I. H. Musselman, K. Cho, **Y. J. Chabal**, Carbon Capture DOE workshop, College Park, MD, October 5-6, 2009.
159. "Interaction of molecular Hydrogen with Microporous Metal Organic Framework Materials" Nour Nijem, Jean-Francois Veyan, **Yves J. Chabal**, Kunhao Li, JeongYong Lee, Jing Li, Lingzhu Kong, Valentino R. Cooper, David C. Langreth, computational Materials Science Network on Predictive Modeling of the growth and properties of energy relevant thin films and nanostructures, Denver, CO, October 18-20, 2009.
158. "Materials Science of Graphene for Novel Device Applications," E.M.Vogel. S.Y.Park, M.J.Kim, **Y.J.Chabal**, R.M.Wallace, J. Kim, K.J.Cho, Nanoelectronics Research Initiative e-Workshop, July 28, 2009, Gaithersburg, MD.
157. "*Interaction of molecular Hydrogen with Microporous Metal Organic Framework Materials*" Nour Nijem, Jean-Francois Veyan, **Yves J. Chabal**, Kunhao Li, JeongYong Lee, Jing Li, Lingzhu Kong, Valentino R. Cooper, David C. Langreth, computational Materials Science Network on Predictive Modeling of the growth and properties of energy relevant thin films and nanostructures, Denver, CO, October 18-20, 2009.
156. "*Nanoporous mixed-matrix membranes for gas separation*", K. J. Balkus, J.P. Ferraris, I. H. Musselman, K. Cho, **Y. J. Chabal**, Carbon Capture DOE workshop, College Park, MD, October 5-6, 2009.
155. "*In situ FTIR studies of thermal annealing of Graphene Oxide*", Muge Acik, Geunsik Lee, Cecilia Mattevi, Manish Chhowalla, Kyeongjae Cho, **Yves Chabal**, NRI workshop, Austin, TX, September 16-17, 2009.
154. "*Novel Theoretical and Experimental Approaches for Understanding and Optimizing Hydrogen-sorbent Interactions in Metal Organic Framework Materials*", Nour Nijem, Jean-Francois Veyan, **Yves J. Chabal**, Kunhao Li, JeongYong Lee, Jing Li, Lingzhu Kong, Valentino R. Cooper, David C. Langreth, Hydrogen storage Contractors' Meeting for DOE- BES, Washington, DC, May 20, 2009.
153. "*Tutorial on Interface formation Mechanisms for deposited Dielectric Layers on Si and High Charge Mobility Substrates*", **Y.J. Chabal**, 2009 MRS Spring Meeting, San Francisco, CA, Apr. 13-17, 2009.
152. "*Hydrogen storage in nanoporous materials*", **Y. J. Chabal**, Physics Colloquium, University of Texas at Dallas, March 23, 2009.
151. "*Hydrogen storage in nanoporous materials*", **Y. J. Chabal**, American Physical Society, Pittsburgh, PA March 16-20, 2009. (Davisson-Germer Prize talk)
150. **"** *In-situ studies of high-k dielectric on semiconductors and metal films on high-k dielectrics*" **Y. J. Chabal**, 3rd International Workshop on high-κ dielectrics on high mobility channel materials, Tsing Hua University, Hsinchu, Taiwan, Jan. 19, 2009.

149. **"** *In-situ studies of high-k dielectric on semiconductors and metal films on high-k dielectrics*" **Y. J. Chabal**, Joint AVS and Taiwan Annual Physical Society Meeting on "Beyong Si CMOS", Tapei, Taiwan, Jan. 20-21, 2009.

148. *"Initial growth of metal films using atomic layer deposition",* **Y.J. Chabal,** J. Kwon, M. Dai, S. Park, R. Gordon, 8th International Conference on Atomic Layer Deposition, Bruges, Belgium, June 29-July 2, 2008.

147. "*Characterizing surface chemistry with infrared spectroscopy*", **Y.J. Chabal**, ThermoFisher Scientific Colloquium, Madison, WI, June 3, 2008.

146. "*Atomic Layer Precursor Evaluation: Need for in-situ characterization*" **Y.J. Chabal**, SAFC Hitech Colloquium, Sheboygan, WI, May 27, 2008.

145. *"Nanoelectronics - Potential and Implications to the Engineering Field"***Y. J. Chabal**, Society of Professional Hispanic Engineers Professional Development Conference, Plano, TX, April 24, 2008.

144. *Surface Infrared Spectroscopy,* **Y.J. Chabal** and K. Raghavachari, American Chemical Society Spring Meeting, New Orleans, April 7-11, 2008.

143. "*Passivation of Silicon Surfaces*", **Y.J. Chabal**, Basics and Advanced Topics of Surface Conditioning and Cleaning Processing for Integrated Circuit Manufacturing, SEMATECH conference, Austin, TX, March 31, 2008.

142. *In situ Transmission Infrared Spectroscopy during Atomic Layer Deposition*, **Jinhee Kwon**, Min Dai, Erik Langereis, Yves J. Chabal, Thermo Research Symposium, March 2008 Princeton, NJ, USA

141. "*Growing Thin Films one layer at a time: Technological Challenges as Scientific Opportunities*", **Y.J. Chabal**, Colloquium Saint Peters College, Jersey City, NJ Dec. 4, 2007

140. "Chemical Functionalization of Semiconductor Surfaces for Biomedical Applications", N. Lapin, **Y.J. Chabal**, Eastern Analytical Symposium, Piscataway, NJ, Nov. 12-16, 2007.

139. "Liquid Methanol Reaction with H-terminated Surfaces", **Y.J. Chabal**, D. Michalak, S. Rivillon-Amy, 54th AVS International Symposium, Seattle, WA, Oct. 15-19, 2007.

138. *"In-situ characterization of thin film growth with Atomic Layer Deposition"* M. Dai, J. Kwon, **Y.J. Chabal,** Z. Li and R. Gordon, American Chemical Society Meeting, Boston, Aug. 20-24, 2007.

137. *"Building materials one layer at a time: Technological challenges as scientific opportunities",* **Y.J. Chabal,** R.B. Woodard Lectures in the Chemical Sciences Harvard/MIT Physical Chemistry Seminar, Harvard University, Boston, MA. Feb. 1-2, 2007.

136. *"In situ Infrared Absorption Spectroscopy for Thin Film Growth by Atomic Layer Deposition",* **Y.J. Chabal,** Symposium on ***Advances in in-situ characterization of film growth and interface processes*** at the Fall 2006 Materials Research Society meeting, Boston, Boston, MA. Nov. 27-Dec.1, 2006.

135. "*Building materials one layer at a time: Technological challenges as scientific opportunities*", **Y.J. Chabal**, Physics Colloquium, Michigan State University, Lansing, Mi, Oct. 26, 2006.

134. "*In-situ infrared absorption spectroscopy for thin film growth by atomic layer deposition*", **Y. J. Chabal**, SPIE Conference on Physical Chemistry of Interfaces and Nanoparticles V, San Diego, CA, Aug. 15-17, 2006.

133. "*Interface chemistry during Atomic Layer Deposition growth studied by in-situ infrared spectroscopy*", **Y. J. Chabal**, Y. Wang, M-T. Ho, M. Dai, AVS Atomic Layer Deposition conference, Seoul, Korea, July 24-26, 2006.

132. *Wet Chemical Cleaning of Germanium Surfaces for Growth of high-κ dielectrics*, **Y. J. Chabal** and S. Rivillon, Symposium on Gate Stack Scaling – Materials Selection, Role of Interfaces, and Reliability Implications, Spring Meeting of the Materials Research Society, San Francisco, CA, April 18-20, 2006.

131. *Passivation and stability of Germanium surfaces* **Y.J. Chabal**, Advanced Gate Stack Engineering Workshop, Austin, TX, Feb. 28-March 1, 2006.

130. *In-situ infrared spectroscopy of high-κ dielectrics growth on semiconductors*, **Y.J. Chabal**, AVS 52nd International Symposium, Boston, MA, Oct. 30-Nov. 4, 2005.

129. *Interface Formation between Ge (and Si) substrates and HfO_2 films using in-situ Infrared Absorption Spectroscopy*, **Y.J. Chabal**, AVS 5th international Conference on Atomic Layer Deposition, San Jose, CA, Aug. 8-10, 2005.

128. *In-situ Infrared Spectroscopy during Atomic Layer Deposition of Metal Oxides*, **Y.J. Chabal**, Workshop on Challenges in Multifunctional Material Stoichiometry, Jackson Hole, WY, July 17-21, 2005.

127. *High-κ dielectrics: the interface problem*, **Y.J. Chabal**, SEMATECH, Austin, TX, June 27, 2005.

126. *Semiconductor surface chemical functionalization for microelectronic applications: Technological challenges as scientific opportunities*, **Y.J.Chabal**, Materials Science Colloquium, University of Delaware, Newark, DE, March 9, 2005

125. *Semiconductor Surface Chemical Functionalization for Electronic Devices*, **Y.J. Chabal**, Gordon Conference on Chemical Reactions at Surfaces, Ventura, CA, Feb. 13-18, 2005.

124. *High-κ dielectric gate oxide interface engineering to minimize EOT*, **Y.J. Chabal**, Advanced Gate Stack Engineering Workshop, Austin, TX, Feb. 14-15, 2005.

123. *Growing Materials One Atomic Layer at a time*, **Y.J. Chabal,** Chemistry colloquia at Smith College and at Wesleyan College, Oct. 7 and 8, 2004

122. *ALD growth of ultra-thin high-κ dielectrics monitored by in-situ infrared spectroscopy,* Seminaire du pole MINAS, LAAS, **Y.J. Chabal**, Toulouse (France) July 7, 2004.

121. *In-situ Studies of Wet and Dry Processing of semiconductor surfaces*, **Y.J. Chabal**, 227th ACS National Meeting, Anaheim, CA, March 28-April 1, 2004.

120. *Atomic Layer Deposition growth of ultra-thin high-κ dielectrics monitored by in-situ infrared spectroscopy,* **Y.J. Chabal**, 1st International NanoElectronics Materials Conference, Grenoble (France), March 2-4, 2004.

119. *Mechanistic studies of semiconductor wafer bonding and layer exfoliation by H-implantation,* **Y.J. Chabal**, Colloquium, SOITECH, Grenoble (France), March 3, 2004.118. *A mechanistic look at semiconductor front-end processing,* Y.J. Chabal, IBM Colloquium Yorktown Heights, NY, Dec. 2, 2003.

117. *Semiconductor Surface passivation,* **Y.J. Chabal**, Symposium on Semiconductor Interfaces, 226th American Chemical Society National Meeting, New York, Sept. 7-11, 2003.

116. *In-situ Infrared Absorption Spectroscopy of Atomic Layer Deposition,* **Y.J. Chabal**, 2003 Atomic Layer Deposition Conference, San Jose, Aug. 4-6, 2003.

115. *Passivation of semiconductor surfaces: technological challenges and opportunity for spectroscopy,* **Y.J. Chabal**, Gordon Conference on Chemistry of Electronic Materials, New London, CT, July 13-18, 2003.

114. *In-situ infrared characterization of oxide growth on semiconductor surfaces,* **Y.J. Chaba**l, ONR workshop on Epitaxial Heterogeneous Interfaces: Formation and Stability, May 5-7, 2003.

113. *Mechanistic Studies of Wafer bonding and Layer Exfoliation by H-implantation,* **Y.J. Chabal**, M.M. Frank, A. Fontcuberta y Moral, J.M. Zahler, Symposium on Integration and Heterogeneous thin-film Materials and Devices of 2003 Spring Meeting of the Materials Research Society, April 21-25, 2003.
112. *High-K Gate Dielectric Interface Engineering,* **Y. J. Chabal**, Sematech International, Austin, TX, Jan. 30, 2003.
111. *How industrial challenges are opportunity for interfacial chemistry* **Y.J. Chabal**, Nicolet Technical Symposium, Chicago, Nov. 12, 2002.
110. *The search for interface perfection,* **Y.J. Chabal**, Chemistry Colloquium, Princeton University, Oct. 15, 2002.
109. *Infrared Absorption studies of Electronic and Vibrational Surface States,* **Y.J. Chabal**, International Workshop on Electron-Phonon Effects in Nanosystems, Montauk, NY, Sept. 23-25, 2002.
108. *Oxidation of Semiconductor Surfaces,* **Y.J. Chabal**, O.Pluchery, F. Amy, M. Frank and K. Raghavachari, International Conference on Solid Films and Surfaces, Marseille, July 4-10, 2002.
107. *Electronic, Photonic and Nanomaterials,* **Y.J. Chabal**, Materials Science Colloquium, Columbia University, May 8, 2002.
106. *Searching for Interface Perfection,* **Y.J. Chabal**, Chemistry Colloquium, Rutgers University, April 22, 2002.
105. *Semiconductor Oxidation,* **Y.J. Chabal**, Physics Colloquium,Brookhaven National Labs, Dec. 18, 2001.
104. *Applications of Infrared Spectroscopy for Technological Surfaces,* **Y.J. Chabal**, 10th International conference on Vibrations at Surfaces (June 17-21, 2001, St Malo, France)
103. *Semiconductor Surface Passivation: Initial nitridation and oxidation of silicon surfaces,* **Y.J. Chabal**, Samuel McElvain Lecture, Department of Chemistry, University of Wisconsin, May 3, 2001, Madison, WI.
102. *Interfacial Chemistry in Direct Wafer Bonding,* **Y.J. Chabal** and M.K. Weldon, Materials Research Society Spring Meeting, April 16-20, 2001, San Francisco, CA.
101. *Semiconductor Surface Passivation: initial oxidation of silicon surfaces,* **Y.J. Chabal**, UCLA Seminar in Chemical Engineering, March 15, 2001, Los Angeles, CA.
100. *Mechanistic Studies of Dielectric Growth on Silicon,* **Y.J. Chabal**, American Physical Society March Meeting, March 12-15, 2001, Seattle, VA.
99. *Applications of Infrared Absorption Spectroscopy in the Microelectronic Industry,* **Y.J. Chabal**, Nicolet Research Symposium, Jan. 25, 2001, Princeton, NJ.
98. *Kinetic Monte Carlo mechanistic study of Si(100) initial thermal oxidation,* A. Estève, **Y.J. Chabal**, K. Queeney, K. Raghavachari, M.K. Weldon, M.D. Rouhani, 28th Conference on the Physics and Chemistry of Semiconductor Interfaces, Jan. 7-11, 2001, Orlando, FL.
97. *Mechanistic Studies of the initial Si(100)-(2x1) Oxidation and Nitridation,* **Y.J. Chabal**, Surface and interface physics Seminar series at the CEA Saclay, Nov. 17, 2000, Saclay, France.
96. *The role of hydrogen in silicon exfoliation by H^+-implantation,* **Y.J. Chabal**, 16th International Conference on the Application of Accelerators in Research and Industry (CAARI), Nov. 1-4, 2000, Denton, TX.
95. *Mechanistic studies of direct wafer bonding and silicon passivation,* **Y.J. Chabal**, Materials Physics Colloquium, Rutgers University, New Brunswick, NJ, March 28,2000.

94. *FTIR Studies of the Si/SiO2 Interface,* **Y.J. Chabal** and K.T. Queeney, Nicolet Technical Symposium (Foster City, CA, Feb. 8, 2000)

93. *Interface Formation in the Growth of Oxides and Nitrides,* **Y.J. Chabal** and K.T. Queeney, 1999 Semiconductor Interface Specialists Conference,Charleston, South Carolina, Dec. 2-4, 1999.

92. *Mechanistic studies of wafer bonding and thin silicon film exfoliation,* **Y.J. Chabal**, M.K. Weldon and E. Isaacs, Fall Symposium of the Materials Research Society (Boston, MA) Nov. 29-Dec.3, 1999

91. *Nature of the Si-SiO_2 Interface: a vibrational study,* **Y. J. Chabal**, Workshop on the Si-SiO_2 and the SiC-SiO_2 Interfaces – Similarities and Differences, Vanderbilt University, Nashville, TN, Nov. 4-5, 1999

90. *The Structure and Composition of Wet Chemical Oxides: A photoemission and infrared study,* R.L Opila, J. Eng, Jr., **Y.J. Chabal**, J. M. Rosamilia, and M.L. Green, Electrochemical Society Meeting, Fall 1999, Honolulu, Hawaii.

89. *Infrared Spectroscopy as a Probe of Semiconductor/Dielectric Interfaces: Growth and Structure of SiO_2 on Si,* K.T. Queeney, M.K. Weldon, **Y.J. Chabal** and K. Raghavachari, 46th International Symposium of the American Vacuum Society (Seattle, WA, Oct. 25-29, 1999)

88. *FTIR Studies of the Growth and Structure of the SiO_2/Si Interface,* K.T. Queeney, **Y.J. Chabal**, M.K. Weldon and K. Raghavachari, Meeting of the American Chemical Society, New Orleans, LO, Aug. 23-27, 1999.

87. *The mechanism of the initial oxidation of Si(100)-(2 x 1) as studied by external transmission infrared spectroscopy and density functional theory,* **Y.J. Chabal**, M.K. Weldon, K.T. Queeney and K. Raghavachari, 12th International Conference on Fourier Transform Spectroscopy, Tokyo,Japan, Aug. 22-27, 1999.

86. *Smart-Cut Technologies and Processes: Infrared Absorption Spectroscopies,* **Y.J Chabal**, M.K. Weldon, Y. Caudano, B. Stefanov and K. Raghavachari, 20th International Conference on Defects in Semiconductors (ICDS-20), Berkeley, CA, July 26-30, 1999.

85. *Elementary Processes in Silicon Oxidation,* **Y.J. Chabal**, Fifth International Conference on Atomically Controlled Surface and Interfaces, Aix-en-Provence, France (July 5-8, 1999)

84. *FTIR Studies of the Growth and Structure of Ultrathin SiO_2 Films on Silicon,* **Y.J. Chabal**, K.T. Queeney, M.K. Weldon and K.Raghavachari, International Conference on the Next Generation Materials and Devices for Silicon-based Microelectronics, Shanghai,China May 30-June 2, 1999.

83. *Silicon Oxidation and Ultra-thin Oxide Formation on Silicon Studied by Infrared Absorption Spectroscopy,* **Y. J. Chabal**, K. Queeney, M. Weldon, K. Raghavachari, Surface & Interface Optics Workshop, St Maxime, France, May 4-8, 1999.

82. *Semiconductor Surface Passivation,* Moses Gomberg Lecture, University of Michigan, April 15, 1999

81. *Initial Steps in Silicon Oxidation and Nitridation: From discrete SiO_x and Si-N_x surface structures to continuous films,* K. T. Queeney, **Y.J. Chabal**, M.K. Weldon, B. Stefanov and K. Raghavachari, Materials Research Society Spring Meeting, San Francisco, CA (April 5-9, 1999)

80. *Initial Growth of Silicon Oxide, Nitride and Oxynitride,* **Y.J. Chabal**, Annual Meeting of the American Physical Society, Atlanta, GA (March 22-26, 1999)

79. *Exotic structures on oxidized Silicon surfaces,* 26th International Conference on the Physics and Chemistry of Surfaces and Interfaces (PCSI-26) San Diego, CA (January 17-21, 1999)

78. *Ultra-thin Oxides and Semiconductor Surface Passivation,* Nicolet Research Symposium, New Brunswick, NJ (Oct. 14, 1999) and Philadelphia, PA (Dec. 3, 1999)

77. *The Fundamental Mechanisms of Silicon Wafer Bonding and Layer Exfoliation,* M.K. Weldon and **Y.J. Chabal**, International Symposium of the American Vacuum Society, Baltimore, MD (Nov. 2-6, 1998)

76. *Water Induced Oxidation on Si(100),* **Y.J. Chabal**, 216th American Chemical Society National Meeting (Boston, MA) Aug. 23-27, 1998.

75. *Theoretical Studies of Silicon Oxidation,* K. Raghavachari, B.B.Stefanov, **Y.J. Chabal**, and M.K. Weldon, Workshop on Semiconductor Surface Chemistry (Telluride, CO) Aug. 9-14, 1998.

74. *Mechanisms of the Initial Oxidation of Si(100)-(2x1),* **Y.J. Chabal**, M.K. Weldon, B.B. Stefanov, A.B. Gurevich, and K. Raghavachari, Workshop on Semiconductor Surface Chemistry (Telluride, CO) Aug. 9-14, 1998.

73. *Infrared Spectroscopy of Silicon Defects, Platelets and Exfoliation upon hydrogen Implantation and Remote Plasma Hydrogenation,* **Y.J. Chabal**, Gordon Research Conf. on Point Defects in Semiconductors (New London, NH) July 12-17, 1998.

72. *Silicon surface oxidation,* **Y.J. Chabal**, Workshop on Macroscopic and Microscopic Characterization of Semiconductor Surfaces and Interfaces (U. Texas, Austin, TX) April 20-21, 1998.

71. *Studies of Silicon Oxidation,* B.B. Stefanov, K .Raghavachari, **Y.J. Chabal** and M.K. Weldon, American Chemical Society, Spring meeting (Dallas, TX) March 30-April 3, 1998.

70. *How does Silicon Oxidize? Infrared Studies of H_2O oxidation on Si(100),* **Y.J. Chabal**, Physics Colloquium, City University of New York (Queens College, NY) March 9,1998.

69. *Mechanistic Studies of Silicon Wafer Bonding and Layer Exfoliation,* M.K. Weldon, V.E. Marsico, **Y.J. Chabal**, et al., 4th Intern. Symposium on Semiconductor Wafer Bonding: Science Technology and Applications (Paris, France), Aug. 31-Sept. 5, 1997.

68. *Industrial Challenges as Research Opportunities: Silicon Wafer Bonding and Silicon Exfoliation,* **Y.J. Chabal**, American Electronic Materials and Devices 1997 Seminar series, (Princeton University, Princeton, NJ) May 12, 1997.

66. *Mechanistic Studies of the Initial Oxidation of Silicon,* M.K. Weldon, B.B. Stefanov, K. Raghavachari, and **Y.J. Chabal**, American Chemical Society Spring meeting (San Francisco, CA), April 7-10, 1997.

67. *Vibrational Studies of the water-induced oxidation of Si(100),* M.K. Weldon, J. Eng, Jr., B.E. Bent, **Y.J. Chabal** and L.M. Struck, Symposium honoring the memory of Prof. Brian E. Bent, 213th American Chemical Society Meeting, San Francisco, CA, April 13-16, 1997.

65. *Infrared Spectroscopy of Hydrogen at Surfaces and Interfaces,* **Y.J. Chabal**, American Physical Society March Meeting (Kansas City, MO), March 17-21, 1997

64. *The Ubiquitous Role of Oxygen and Hydrogen in Silicon Processing: A surface scientist view,* **Y.J. Chabal**, 11th Annual Symposium of the Lab. Surface Modification (Rutgers, NJ), Feb. 13, 1997.

63. *Infrared Spectroscopy as a Probe of Fundamental Processes occurring at Buried Interfaces,* M. K. Weldon and **Y.J. Chabal**, Nicolet Instrument Corporation Research Symposium (Pasadena, CA) Jan. 15, 1997.

62. *Applications of Infrared Spectroscopy to the Microelectronics Industry,* **Y.J. Chabal**, Neuvieme Entretiens du Centre Jacques Cartier sur Surfaces and Interfaces of Advanced Materials (Montreal, Canada) Oct. 2-4, 1996.

61. *Electron-Phonon coupling Signatures in HREELS and IR Spectra of Ultrathin Fullerene Films on Metals,* P. Rudolf, P. Dumas, K. Hevesi, R. Caudano, G.P. Williams, L.M. Struck and **Y.J. Chabal**, 8th International Conf. on Vibrations at Surfaces (Birmingham, England) June 23-27, 1996.

60. *Infrared Spectroscopy as a Probe of Fundamental Processes in Microelectronics: Silicon wafer Cleaning and Bonding,* M.K. Weldon and **Y.J. Chabal**, 8th International Conf. on Vibrations at Surfaces (Birmingham, England) June 23-27, 1996.

59. *Spectroscopic Fingerprints at H/Si(111)-(1x1) and Ag/H/Si(111)-(1x1) Interfaces,* P. Dumas and **Y.J. Chabal**, European Research Conf. on Fundamental Aspects of Surface Science: Semiconductor Surfaces (Blankerberge, Belgium) June 7-11, 1996.

58. *Industrial Challenges as Opportunities for Basic Research: Silicon Wafer Bonding,* **Y.J. Chabal**, Chemical Physics Colloquium, Columbia University (Feb. 6, 1996).

57. *Physics and Chemistry of Silicon Wafer Bonding: an infrared Absorption study,* **Y.J. Chabal**, M.K. Weldon, S.B. Christman, E.E.Chaban, L.C. Feldman, D.R. Hamann, et al., 23rd conf. on the Physics and Chemistry of Semiconductor Surfaces (La Jolla, CA) Jan. 21-25, 1996.

56. *Industrial Challenges as Opportunities for Basic Research: Silicon-on-Insulator and Silicon Wafer Bonding,* **Y.J. Chabal**, Materials Science Department Colloquium, (Stony Brook, NY) Nov. 1, 1995.

55. *Interface Infrared Characterization of Direct-bonded Si-Si Substrates,* **Y.J. Chabal**, et al., Workshop on Direct Silicon-silicon Bonding for Power Devices, NRL (Washington DC) Nov. 9, 1995.

54. *Infrared Spectroscopy of Semiconductor Surfaces and Interfaces,* **Y.J. Chabal**, Gordon Conf. on Excitation at Semiconductor Surfaces: Fundamental Concepts and Applications in Semiconductor Processing (Hoahu, Hawaii) Nov. 13-18, 1994.

53. *Cleaning of Semiconductor Surfaces: Infrared Characterization,* **Y.J. Chabal**, Y. Ma and R. Gottscho, American Vacuum Society 6th Conf. on Quantitative Surface Analysis (Minneapolis, MN) Oct. 16-20, 1995.

52. *Characterization of Silicon Surfaces and Interfaces by Vibrational Spectroscopy,* **Y.J. Chabal**, M.A. Hines and D. Feijoo, 41st National Symposium of the American Vacuum Society (Denver, CO) Oct. 24-28, 1994

51. *Atomic Scale Removal Mechanism during Chemo-mechanical Polishing of Si(100) and Si(111),* G.J. Pietsch, G.S. Higashi and **Y.J. Chabal**, 14th European Conf. on Surface Science (ECOSS-14) (Leipzig, Germany) Sept. 19-23, 1994.

50. *Phase Relaxation of the Si-H stretch mode on Stepped H/Si(111) Surfaces,* P. Jakob and **Y.J Chabal**, 14th European Conf. on Surface Science (ECOSS-14) (Leipzig, Germany) Sept. 19-23, 1994.

49. *Hot Water Etching of Silicon Surfaces: Mechanisms and Implications to Device Fabrication.* G. Higashi, T. Boone, K. Hanson **Y.J. Chabal** et al, Symposium on UltraClean Processing of Silicon Surfaces (Bruges, Belgium) Sept. 9-14, 1994.

48. *Vibrational Characterization and Electronic Properties of ordered, ideally hydrogen – terminated Si(111) Surfaces,* P. Dumas and **Y.J. Chabal**, 18th Int. Sem. On Surface Physics (Kudowa, Poland) June 6-11, 1994.

47. Vibrational and Electronic Properties of H/Si(111)-(1x1) Surfaces, P. Dumas and **Y.J. Chabal**, Ann. Meeting of the Belgium Physical Society (Mons, Belgium) May 26-27, 1994.

46. *Vibrational Dynamics at Surfaces,* P. Dumas and **Y.J. Chabal**, 14th Int. General Conf. of the Condensed Matter Division (Madrid, Spain) March 28-31, 1994.
45. *Chemo-mechanical polishing of Silicon: Chemical Surface Termination and Atomic Mechanism of Removal,* G.J. Pietsch, G.S. Higashi and **Y.J. Chabal**, Annual Meeting of the German Physical Society (Muenster, Germany) March 21-24, 1994.
44. *Dimensions of Luminescent Porous Silicon Structures,* S. Schuppler, S.L Friedman, M.Marcus, **Y.J. Chabal** et al., American Physical Society March Meeting (Pittsburgh, PA) March 21-25, 1994.
43. *Chemical Preparation and Structure Characterization of Hydrogen terminated Si(111) Surfaces,* **Y.J. Chabal**, American Physical Society March Meeting (Pittsburgh, PA) March 21-25, 1994.
42. *Surface Vibrational Spectroscopies for Silicon Processing,* **Y.J. Chabal**, Int. conf. on Advanced Microelectronic Devices and Processing, Sendai, Japan, March 3-5, 1994.
41. *Chemically prepared Silicon Surfaces studied by Optical Spectroscopy,* **Y.J. Chabal**, Materials Science Colloquium, University of Wisconsin (Madison, WI) Nov. 11, 1993.
40. *Adsorbate Vibrations at Semiconductor Surfaces,* **Y.J. Chabal**, ONR Workshop on Surface Dynamical Processes (Nashville, TN) Oct. 28-29, 1993.
39. *Using Vibrational Spectroscopy to probe Adsorbate Orientations and Structure on Silicon Surfaces,* M.A. Hines and **Y.J. Chabal**, American Chemical Society Meeting (Washington, DC) Aug. 23-27, 1993.
38. *Interadsorbate Vibrational Energy Flow on stepped H/Si(111) Surfaces,* M. Morin, K. Kunhke, P. Jakob, **Y.J. Chabal**, A.L. Harris, 7th Int. Conf. on Vibrations at Surfaces (Portofino, Italy) June 14-17, 1993.
37. *Chemical Reactions at the silicon/solution interface studied by optical spectroscopy,* **Y.J. Chabal**, Semiconductor Surface Reactions: and exchange between Electrochemistry and Surface Science workshop (Amsterdam, Netherland) June 8-14, 1993.
36. *Chemicstry on Silicon Surfaces by Optical Spectroscopy,* **Y.J. Chabal** and M.A. Hines, American Chemical Society Meeting (Denver, CO) March 28-April 2, 1993.
35. *Vibrational Spectroscopy of Adsorbates at Semiconductor Surfaces,* **Y.J. Chabal**, Gordon conference on Chemical Reactions at Surfaces (Ventura, CA) March 8-12, 1993.
34. *Recent Advances in Surface Science Techniques,* **Y.J. Chabal**, American Vacuum Society Tutorial, 39th National Symposium (Chicago, IL) Nov. 8, 1992.
33. *Infrared Spectroscopy of Semiconductor Surfaces: Hydrogen-terminated Silicon Surfaces,* Y.J. Chabal, 11th European congress on Molecular Spectroscopy (Vienna, Austria) Aug. 23-28, 1992.
32. *Etching of Silicon(111) and (100) in HF solutions: H-termination, atomic structure and overall morphology,* **Y. J. Chabal**, Materials Research Society Conference (San Francisco, CA) April 27-May 1, 1992.
31. *Optical Techniques for Surface Science,* **Y.J. Chabal**, APS March Meeting (Indianapolis, IN) March 15, 1992.
30. *Infrared Spectroscopy of Chemically prepared Silicon Surfaces,* **Y.J. Chabal**, Fujitsu Laboratories (Atsug, Japan) Jan. 25, 1992.
29. *Infrared Spectroscopy of Semiconductor Surfaces,* **Y.J. Chabal**, Musashi Institute of Technology (Tokyo, Japan) Jan. 20, 1992.
28. *Infrare Spectroscopy of Chemically prepared Silicon Surfaces,* **Y.J. Chabal**, Colloquium, Tohoku University (Sendai, Japan) Jan. 19, 1992.

27. *Control of Silicon Surfaces: Morphology by Aqueous Chemical Etching,* **Y.J. Chabal**, P. Jakob and G. S. Higashi, International Workshop on Science and Technology for Surface Reaction Process (Tokyo, Japan) Jan. 22-24, 1992.
26. *Chemically HF-etched Si(111) and Si(100): from rougher to atomically flat H-terminated Surfaces,* P. Dumas and **Y.J. Chabal**, ECOSS 12 (Stokholm, Sweden) Sept. 8-12, 1991.
25. *Chemically prepared Silicon Surfaces: etching proces, hydrogen termination, surface structure and vibrational dynamics,* **Y.J. Chabal**, 2nd Pennsylvania Surface Science Workshop, Lehigh University (Lehigh, PA) July 17-19, 1991.
24. *Terminaison hydrogène du Si(100),* K. Berrada, P. Dumas and **Y.J. Chabal**, Journées de la Société de Chimie Physique (Paris, France) May 21, 1991.
23. *Hydrogen chemisorption on Seminconductor and Metal Surfaces: infrared absorption studies of H interactions with the substrate,* **Y.J. Chabal**, Symposium on Hydrogen in and on solids, American Chemical Society Meeting (Atlanta, GA) April 14-19, 1991.
22. *Hydrogen passivation of Silicon Surfaces using HF etching,* **Y.J. Chabal**, Symp. on Silicon Hydride Chemistry and Silicon CVD Mechanics, American Chemical Society Meeting (Atlanta, GA) April 14-19, 1991.
21. *Infrared Spectroscopy of H on W(100) and Mo(100),* **Y.J. Chabal**, European Science Foundation Workshop on the (100) surface of Tungsten: Phase transitions and adsorbate-induced reconstruction (Cambridge, England) March 25-27, 1991.
20. *Adsorbate-substrate Vibration: H on Si(111),* **Y.J. Chabal**, American Physical Society March Meeting (Cincinnati, OH) March 18-22, 1991.
19. *Infrared Spectroscopy of chemically-prepared Silicon Surfaces,* **Y.J. Chabal**, Columbia Radiation Laboratory Seminar (New York, NY) March 11, 1991.
18. *Surface Infrared Spectroscopy and its Applications to the Vibrational Dynamics of the Ideally Hydrogen-terminated Si(111) Surface,* **Y.J. Chabal**, Chemical Physics Seminar Princeton University (Princeton, NJ) Jan. 31, 1991
17. *Dynamics of the ideally H-terminated Si(111) Surface studied by Vibrational Spectroscopy,* **Y.J. Chabal**, Surface Science Seminar, University of Pennsylvania (Philadelphia, PA) Nov. 2, 1990.
16. *Vibrational Spectroscopy of Hydrogen-terminated Silicon Surfaces,* **Y.J. Chabal**, condensed Matter Seminar, Ohio University (Athens, OH) Nov. 1, 1990.
15. *Hydrogen Passivation of Silicon Surfaces investigated with Infrared Spectroscopy,* **Y.J. Chabal**, 37th Ann.American Vacuum Society Symposium &Topical Conferences (Toronto, Canada) Oct. 8-12, 1990.
14. *Dynamics of the ideally H-terminated Si(111) Surface studied by Vibrational Spectroscopy,* **Y.J. Chabal,** 17th Annual meeting of the Fed. Anal. Chem. And Spect. Soc. (Cleveland, OH) Oct. 7-12, 1990.
13. *Infrared Spectroscopy of Hydrogen on Semiconductor Surfaces,* **Y.J. Chabal**, 6th Trieste Semiconductor Symposium on Hydrogen in Semiconductors: Bulk and Surface Properties (Trieste, Italy) Aug. 27-31, 1990.
12. *Infrared Spectroscopy of Water-modified Silicon Surfaces,* **Y.J. Chabal**, Gordon conf. on Fundamental Interactions of Water with Solid Surfaces (meridien, NH) July 16-20, 1990.
11. *Dynamics of Ideally H-terminated Si(111) Surface,* **Y.J. Chabal**, 26th Int.Yamada Conference on Surface as a New Material (Osaka, Japan) July 2-6, 1990.

10. *Chemistry at Semiconductor Surfaces studied by Infrared Spectroscopy,* **Y.J. Chabal**, First Catalysis Research Center Int. Symp. on Frontiers of Surface Chemistry (Hokkaido, Japan) June 28-29, 1990.
9. *Infrared Spectroscopy of Chemically Prepared Silicon Surfaces: Hydrogen Terminated Si(111),* **Y.J. Chabal**, Condensed Matter Physics Seminar, Rutgers University (Piscataway, NJ) May 10, 1990.
8. *Spectroscopie Infrarouge de Surface Resolue en Temps et dans l'Infrarouge Lointoin,* **Y.J. Chabal**, LURE (Orsay, France) Jan. 29, 1990.
7. *Etude par Spectroscopie Infrarouge des Surfaces de Silicium Modifiées Chimiquement,* **Y.J. Chabal** Ecole Polytechnique (Palaiseau, France) Jan. 25, 1990.
6. *Etude par Spectroscopie Infrarouge des Surfaces de Silicium Modifiées Chimiquement,* **Y.J. Chabal**, Séminaire spécialisé at the CEA (Saclay, France) Jan. 24, 1990.
5. *Etude par Spectroscopie Infrarouge des Surfaces de Silicium Modifiées Chimiquement,* **Y.J. Chabal**, Séminaire de l'Institut de Physique et Chimie des Matériaux, Université of Nantes (Nantes, France) Jan. 22, 1990.
4. *Infrared Spectroscopy of Chemically Modified Silicon Surfaces***, Y.J. Chabal**, Seminar for Interdisciplinary Laboratory of Electronic Spectroscopy, University of Namur (Namur, Belgium), Jan. 19, 1990.
3. *Infrared Spectroscopy of Chemically Modified Silicon Surfaces***, Y.J. Chabal**, Institute Seminar, University of Hannover (Hannover, Germany) Jan. 18, 1990.
2. *Infrared Spectroscopy of Chemically Modified Silicon Surfaces***, Y.J. Chabal**, Solid State Seminar, University of Dusseldorf (Dusseldorf, Germany) Jan. 17. 1990.
1. *Infrared Spectroscopy of Chemically Modified Silicon Surfaces***, Y.J. Chabal**, Physics Colloquium at Fritz-Haber Institute (Berlin, Germany) Jan. 16, 1990.

Advising

Ph.D. Students Supervised:

***former*:** Veronica Burrows (Chem. Engr. ASU), Judy Prybyla (Lucent), Joe Eng (formerly Agere), Alejandra Gurevich (Lucent), Xiang Zhang (Harvard), Ming-Tsung Ho, Meng Li (AZ Electronics), Min Dai (IBM), Melissa Stokes (Uni-Solar), Norman Lapin (BioArray Solutions), Muge Acik (TI), Nour Nijem (UCB); Irinder Chopra (Global Foundry), Saeedeh Ravandi, Tyson Barlett, Amanda Molling, Yingzheng Lu, William De Benedetti (Cornell), Cheng Gong (UCB), Wilfredo Cabrera (Picosun), Kui Tan (UT Dallas), Karla Maria Bernal Ramos (Applied Materials), Louis Caillard (Alchimer, France);

***current*:** Abraham Vega Zendejas, Don Dick, Tatiana Peixoto, Natis Shafiq, Yuzhi Gao, Luis Fabian Pena-Orduna, Aaron Dangerfield, Mila'na Jones, Jasiel Cabrera, Rezwanur Rahman, Sean Dillon .

Postdoctoral Fellows supervised:

***former*:** Janice Reutt-Robey (Maryland), Melissa Hines (Cornell), Lisa Struck (NIST), Monique Suhren (Wacker), Peter Jakob (Julich), Marcus Weldon (Lucent), Kate Queeney (Smith), Fabrice Amy (Air Products), Martin Frank (IBM), Rhett Brewer (Intel), Yu Wang (Tulane), Sandrine Rivillon (Air Products), David Michalak (Intel), Laurence Goux (Australia), Sunkyng Park (Wonek, Korea), Damien Aureau (CNRS); Oliver Seitz (Rolith, Inc), Jinhee Kwon, Katy Rodenko (IntelliEpi), Peter Thissen (KIT, Karlsruhe, Germany); Lihong Liu (AMD), Wilfredo Cabrera (Picosun), Weina Peng (Micron);

***current*:** Jean-François Veyan, Sara Rupich, Charith Nanayakkara, Eric Mattson, Kui Tan, Joe Klesko.

Teaching activities

2015

Spring 2015	MSEN	8V70-023	Research in MSEN
Spring 2015	PHYS	8V70-074	Research in MSEN
Spring 2015	MSEN	8V99-023	Dissertation
Spring 2015	MSEN	8V98-023	Master's Thesis
Spring 2015	CHEM	4V91-034	Research in Chem (ind. study)
Spring 2015	CHEM	4390-034	Senior Research (Adv. writing)
Spring 2015	MECH	4V95-003	Undergrad Research (Ind. Study)
Spring 2015	NANO	4V95-002	Undergrad research in Nano
Spring 2015	PHYS	8V70-074	Undergrad research (Ind. Study)
Spring 2015	PHYS	4399-002	Senior Honors (ind. Study)
Spring 2015	PHYS	8399-074	Dissertation
Summer 2015	PHYS	8V70-023	Research in Materials Science
Summer 2015	MSEN	8V98-023	Masters research
Summer 2015	MSEN	8V99-023	Research in MSEN
Summer 2015	PHYS	4V10-074	Special topic (ind. Study)
Summer 2015	PHYS	4V70-074	Research in MSE (ind. Study)
Fall 2015	EE	4V95-001	Undergrad Research (Ind. Study)
Fall 2015	PHYS	8399-074	Dissertation
Fall 2015	MSEN	8V70-023	Research MSEN
Fall 2015	PHYS	8V70-074	Research in Materials Science
Fall 2015	MSEN	8V98-023	Thesis Master's
Fall 2015	MSEN	8V99-023	Dissertation
Fall 2015	NANO	4V95-009	Undergrad Research in Nano
Fall 2015	NANO	3310-001	Introduction to Materials Science
Fall 2015	ECS	3310-001	Introduction to Materials Science
Fall 2015	NANO	4V95-001	Undergrad research in Nano
Fall 2015	MECH	4V95-001	Introduction to Materials Science

2014

Semester	Prefix	Number	Course Name
Spring 2014	MSEN	8V70-023	Research in MSEN
Spring 2014	PHYS	8V70-074	Research in MSEN
Spring 2014	MSEN	8V99-023	Dissertation
Spring 2014	MSEN	8V98-023	Master's Thesis
Spring 2014	CHEM	4V91-034	Research in Chem (ind. study)
Spring 2014	CHEM	4390-034	Senior Research (Adv. writing)
Spring 2014	MECH	4V95-003	Undergrad Research (Ind. Study)
Spring 2014	NANO	4V95-002	Undergrad research in Nano
Spring 2014	PHYS	8V70-074	Undergrad research (Ind. Study)
Spring 2014	PHYS	4399-002	Senior Honors (ind. Study)
Spring 2014	PHYS	8399-074	Dissertation
Summer 2014	PHYS	8V70-023	Research in Materials Science
Summer 2014	MSEN	8V98-023	Masters research

Summer 2014	MSEN	8V99-023	Research in MSEN
Summer 2014	PHYS	4V10-074	Special topic (ind. Study)
Summer 2014	PHYS	4V70-074	Research in MSE (ind. Study)
Fall 2014	EE	4V95-001	Undergrad Research (Ind. Study)
Fall 2014	PHYS	8399-074	Dissertation
Fall 2014	MSEN	8V70-023	Research MSEN
Fall 2014	PHYS	8V70-074	Research in Materials Science
Fall 2014	MSEN	8V98-023	Thesis Master's
Fall 2014	MSEN	8V99-023	Dissertation
Fall 2014	NANO	4V95-009	Undergrad Research in Nano
Fall 2014	NANO	3310-001	Introduction to Materials Science
Fall 2014	ECS	3310-001	Introduction to Materials Science
Fall 2014	NANO	4V95-001	Undergrad research in Nano
Fall 2014	MECH	4V95-001	Introduction to Materials Science

2013

Semester	Prefix	Number	Course Name
Spring 2013	MSEN	8V70-023	Research in MSEN
Spring 2013	PHYS	8V70-074	Research in MSEN
Spring 2013	MSEN	8V99-023	Dissertation
Spring 2013	MSEN	8V98-023	Masters Thesis
Spring 2013	CHEM	4V91-103	Research in Chem (ind. study)
Spring 2013	CHEM	4390-103	Senior Research (Adv. writing)
Spring 2013	EE	4V98-005	Undergrad Research (Ind. Study)
Spring 2013	NANO	4V95-002	Undergrad research in Nano
Spring 2013	PHYS	8V70-074	Undergrad research (Ind. Study)
Spring 2013	PHYS	4399-002	Senior Honors (ind. Study)
Spring 2013	PHYS	8399-074	Dissertation
Summer 2013	PHYS	8V70-023	Research in Materials Science
Summer 2013	MSEN	8V98-023	Masters research
Summer 2013	MSEN	8V99-023	Research in MSEN
Summer 2013	PHYS	4V10-074	Special topic (ind. Study)
Summer 2013	PHYS	4V70-074	Research in MSE (ind. Study)
Fall 2013	EE	4V95-001	Undergrad Research (Ind. Study)
Fall 2013	PHYS	8399-074	Dissertation
Fall 2013	MSEN	8V70-023	Research MSEN
Fall 2013	PHYS	8V70-074	Research in Materials Science
Fall 2013	MSEN	8V98-023	Thesis Master's
Fall 2013	MSEN	8V99-023	Dissertation
Fall 2013	NANO	4V95-009	Undergrad Research in Nano
Fall 2013	NANO	3310-001	Introduction to Materials Science
Fall 2013	ECS	3310-001	Introduction to Materials Science
Fall 2013	NANO	4V95-001	Undergrad research in Nano

2012

Semester	Prefix	Number	Course Name
Spring 2012	MSEN	8V70-023	Research in MSEN
Spring 2012	PHYS	8V70-074	Research in MSEN

Spring 2012	MSEN	8V99-023	Dissertation
Spring 2012	EE	4V98-005	Undergrad Research (Ind. Study)
Spring 2012	NANO	4V95-002	Undergrad research in Nano
Spring 2012	PHYS	8V70-074	Undergrad research (Ind. Study)
Summer 2012	PHYS	8V70-074	Research in Materials Science
Summer 2012	MSEN	8V70-023	Research in MSEN
Fall 2012	PHYS	8399-074	Dissertation
Fall 2012	MSEN	8V70-023	Research MSEN
Fall 2012	NANO	4V95-001	Undergrad Research in Nano
Fall 2012	PHYS	8V70-074	Research in Materials Science
Fall 2012	MSEN	8V98-023	Thesis Master's
Fall 2012	MSEN	8V99-023	Dissertation
Fall 2012	NANO	4V95-009	Undergrad Research in Nano
Fall 2012	NANO	3310	Introduction to Materials Science 8

2011

Semester	Prefix	Number	Course Name
Spring 2011	MSEN	8V70-023	Research in MSEN
Spring 2011	PHYS	8V70-074	Research in MSEN
Spring 2011	MSEN	8V99-023	Dissertation
Summer 2011	PHYS	8V70-074	Research in Materials Science
Summer 2011	CHEM	4390-030	Senior Research &Adv. Writing
Summer 2011	MSEN	8V70-023	Research in MSEN
Fall 2011	PHYS	8399-074	Dissertation
Fall 2011	MSEN	8V70-023	Research MSEN
Fall 2011	NANO	4V95-091	Undergrad Research in Nano
Fall 2011	PHYS	8V70-074	Research in Materials Science
Fall 2011	MSEN	8V98-023	Thesis Master's
Fall 2011	MSEN	8V99-023	Dissertation
Fall 2011	NANO	4V95-009	Undergrad Research in Nano
Fall 2011	EE	4V95-002	Materials for Sustainable Energy
Fall 2011	MECH	4V95-002	Materials for Sustainable Energy
Fall 2011	PHYS	4V10-002	Materials for Sustainable Energy
Fall 2011	MSE	5320-002	Materials for Sustainable Energy

2010

Semester	Prefix	Number	Course Name
Spring 2010	MSEN	8V70-023	Research in MSEN
Spring 2010	PHYS	8V70-074	Research in MSEN
Spring 2010	EE	4V97-001	Independent Study in EE
Summer 2010	CHEM	4V91-030	Research in Chemistry
Summer 2010	CHEM	4390-030	Senior Research &Adv. Writing
Summer 2010	MSEN	8V70-023	Research MSEN
Summer 2010	MSEN	5300	Intro. To Materials Science
Summer 2010	PHYS	5376-09M	Intro to materials science
Summer 2010	PHYS	5V49-074	Special Topics in Physics
Fall 2010	MSEN	8V70-023	Research MSEN
Fall 2010	NANO	4V95-091	Undergrad Research in Nano

Fall 2010	PHYS	8V70-074	Research in Materials Science

2009

Semester	Prefix	Number	Course Name
Spring 2009	MSEN	8V70-023	Research in MSEN
Spring 2009	PHYS	8V70-074	Research in MSEN
Summer 2009	MSEN	8V40-023	Individual Instruction
Summer 2009	MSEN	8V70-023	Research MSEN
Summer 2009	MSEN	5300	Intro. To Materials Science
Summer 2009	PHYS	5V49-074	Special Topics in Physics
Fall 2009	MSEN	8V70-023	Research MSEN
Fall 2009	MSEN	5300-001	Intro. To Materials Science
Fall 2009	PHYS	8V70-074	Research in Materials Science

2008

Semester	Prefix	Number	Course Name
Spring 2008	MSEN	8V70.077	Research in Mat. Sci.
Spring 2008	PHYS	8V70.077	Research in Mat. Sci.
Spring 2008	MSEN	5360-001	(**1 lecture**) Characterization
Summer 2008	PHYS	8V70.077	Research in Mat. Sci.
Summer 2008	MSEN	8V70-074	Research in Mat. Sci.
Fall 2008	PHYS	8V70.077	Research in Mat. Sci.
Fall 2008	MSEN	8V70.074	Research in MSEN

Service and elected positions

1. ***Advisory Editorial Board*** of Vibrational Spectroscopy (1991-94), Surface Science (2010-2012), Chemistry of Materials (2012-14), C&EN (2102-2015), and Metal Organic Frameworks (2012-2015).

2. ***Conference chair:*** 6th Int'l Conf. on Vibrations at Surfaces (1990); 72nd Physical Electronics Conference (2012); 2007 Atomic Layer Deposition conference (San Diego); 2012 Physical Electronics (Dallas).

3. On ***organizing committee*** of: Physical Electronics Conference (1993-97); Symposium on Advanced Microelectronics & Devices (Japan, 1992); APS focused session on Semiconductor Surface Processing (1994) and the APS-FIAP symposium on Dynamics of Silicon Oxidation & Etching (1998); ACS-MARM conference (Rutgers, 2005); Vibrations at Surfaces (2004,2010-13); ALD conf. (2010-13); Program committee for the 2012 International Conference on Solid Films and Surfaces (ICSFS 16), and the International Conference on the Physics of Semiconductors (ICPS 2014).

4. ***Elected positions***: Program Chair and Chair of the Surface Science Division, American Vacuum Society (2009-10); MRS Board of Directors (2008-2010); Member at Large of the Executive Committee of the APS Division of Condensed Matter Physics (2010-2013); AVS Trustee (2014-2017).

5. ***Service***: Chair, MRS Membership Engagement committee (2012-14). On ACS Nano&Nanoletters "Ask-a-Scientist" column (Jan-Sept. 2011). Executive Committee of the AVS Surface Science Division (1990-94; 2007-09) and Electronics & Materials Processing Division (1996-98);