Yves J. Chabal
Invited Talks - since 1990

147. *"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.
146. "*Characterizing surface chemistry with infrared spectroscopy*", **Y.J. Chabal**, ThermoFisher Scientific Colloquium, Madison, WI, June 3, 2008.
145. "*Atomic Layer Precursor Evaluation: Need for in-situ characterization*" **Y.J. Chabal**, SAFC Hitech Colloquium, Sheboygan, WI, May 27, 2008.
144. "*Nanoelectronics - Potential and Implications to the Engineering Field"***Y. J. Chabal**, Society of Professional Hispanic Engineers Professional Development Conference, Plano, TX, April 24, 2008.
143. *Surface Infrared Spectroscopy,* **Y.J. Chabal** and K. Raghavachari, American Chemical Society Spring Meeting, New Orleans, April 7-11, 2008.
142. "*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.
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.
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