

ALAN CAMPION
CURRICULUM VITAE

EDUCATION

New College, Sarasota, Florida - B.A. (Chemistry), 1972.

University of California, Los Angeles - C. Phil, 1976; Ph.D. (Chemistry), 1977.

University of California, Berkeley - Research Scientist, 1978; NSF National Needs Postdoctoral Fellow, 1979.

RESEARCH AND PROFESSIONAL EXPERIENCE

Research interests: Surface physics and chemistry, laser spectroscopy.

The University of Texas at Austin, Assistant, Associate and Professor of Chemistry, 1979-present.

Dow Chemical Company Professor of Chemistry, 1993-present.

Chairman, Department of Chemistry and Biochemistry, 1991-1995

Director, Center for Condensed Matter Spectroscopy, 1989-1996

Postdoctoral research: University of California, Berkeley, 1978-1979. Charles Harris, research director: surface physics.

Graduate research: University of California, Los Angeles, 1972-1977. Mostafa El-Sayed, research director: laser spectroscopy, energy transfer in condensed phases.

Undergraduate research: University of Tennessee, 1970-1972. Ffrancon Williams, research director: radiation chemistry.

HONORS AND AWARDS

John Simon Guggenheim Memorial Fellow, 2001

Director of Research, CNRS, LURE, University of Paris 11, Orsay 2001-2002

Academy of Distinguished Teachers, The University of Texas at Austin, 1999

Texas Excellence Teaching Award (Ex Students' Association) 1999

College of Natural Sciences Foundation Teaching Excellence Award (Runner-Up) 1992

Jean Holloway Award for Teaching Excellence, University of Texas at Austin, 1989

College of Natural Sciences Foundation Teaching Excellence Award, 1988

Coblentz Memorial Prize in Molecular Spectroscopy, 1987

Alfred P. Sloan Research Fellow, 1983

Camille and Henry Dreyfus Teacher-Scholar, 1982

NSF National Needs Postdoctoral Fellow, 1979

Sigma Xi, 1976

IBM Predoctoral Fellow, 1975, 1976

Florida Regents' Scholar, 1968-1972

PROFESSIONAL SOCIETIES

American Chemical Society
American Physical Society
American Vacuum Society
American Association for the Advancement of Science

OTHER PROFESSIONAL ACTIVITIES

Participant ACS Workshop “Increasing Participation of Hispanic Undergraduates in Chemistry”
November 2008
Scientific Advisory Board, Cerium Laboratories
Vice Chair, Chair, NRC Board of Assessment of NIST Programs, Chemical Sciences and
Technology Laboratory 2002-2005
Member, NRC Board of Assessment of NIST Programs, Chemical Sciences and Technology
Laboratory 1999-2001
Consultant, Advanced Micro Devices (AMD) 1996-2001
Vice Chair Council for Chemical Research Vision 2020 Committee, 1996-1999
Board of Governors, Council for Chemical Research 1995-1997
Editorial Advisory Board Spectrochimica Acta A, 1991-1995
Editorial Advisory Board Journal of Physical Chemistry, 1991-1994
Chairman 1994 Gordon Conference on Vibrational Spectroscopy
Organizer, Kendall Award Symposium, American Chemical National Meeting, Boston,
Massachusetts, April 1989
Organizing Committee Sixth International Conference on Vibrations at Surfaces, Long Island,
New York, September 1990

UNIVERSITY SERVICE

Chair, Department of Chemistry and Biochemistry Development Committee 2008
Chair, Department of Chemistry and Biochemistry Diversity Committee 2008
Member, Faculty Advisory (to the President) Budget Committee, 1998-1999
Chair, College of Natural Sciences Enrollment Management Committee 1998
Plan II Advisory Committee, 1995-present
Internal Review Committee, Department of Astronomy, 1993
Chairman, Technology Task Force, University Strategic Plan, 1993
Member, Committee on the Undergraduate Experience, 1991
Member, Committee on Parking and Traffic, 1989-1991
Member, Committee on Educational Policy, 1985-1987

PUBLICATIONS and PATENTS

More than 120 publications in refereed journals, one textbook, one patent

INVITED LECTURES

More than 100 at universities, industrial and government laboratories and professional
conferences both domestically and abroad.

CURRICULUM DEVELOPMENT

Professor Champion has developed two yearlong courses over the course of the past 15 years that are now an integrated part of the lower division (first two years) curriculum in the Department of Chemistry and Biochemistry at The University of Texas at Austin. CH304K, CH305 is a two semester sequence designed to satisfy the six hour requirement in the same science for students not majoring in science or engineering, and CH301H, CH302H the honors freshman course he created originally for chemistry and biochemistry majors but which now serves as the freshman chemistry honors course for students in honors programs across the University (Dean's Scholars, Plan II, Turing Scholars, etc.) CH 107 the Intensive Chemistry Seminar is a supplemental, group learning experience associated with CH301H and CH302H; it is modeled after Uri Treisman's Emerging Scholars Program in mathematics.

CH304K and CH305 are based upon the ACS *Chemistry in Context* approach and text but with added depth and breadth. It's a real chemistry course not a course "about" chemistry. Having the course run for two semesters allows coverage of the entire range of topics in *Chemistry in Context* that includes fundamentals as well as significant coverage from physical chemistry, organic chemistry, polymer chemistry and biochemistry. The course is organized around topics of global interest and the science is taught on a need to know basis. The stratospheric ozone destruction problem, for example, motivates the discussion of elementary quantum mechanics, molecular structure, spectroscopy and photochemistry, kinetics and catalysis. Social, political and economic considerations are introduced, as are elementary ideas from risk perception and analysis and cost/benefit analysis.

CH301H, CH302H is a rigorous honors level introduction to chemistry that begins with structure and bonding (with a solid introduction to quantum mechanics), proceeds to describe the physical properties of atoms, molecules and macroscopic collections thereof, then continues with a discussion of chemical properties and reactions under equilibrium conditions, and finally finishes with dynamics and kinetics. Having used earlier editions of *Principles of Modern Chemistry* by Oxtoby, Gillis and Nachtrieb, Champion joined Oxtoby and Gillis to produce the 6th edition of *Principles*, the newest edition of what has long been considered to set the standard for honors level freshman chemistry. The new edition was essentially completely rewritten to preserve that tradition, while changing the sequence of topics to reflect contemporary tastes and incorporating significant changes for better organization, improved readability and proprietary, state-of-the-art graphics.

CH107 Intensive Chemistry Seminar (ICS) is a one credit, twice weekly seminar in which CH301H and CH302H students meet in self-selected groups of four or five to work supplemental problems under the supervision of senior undergraduates and a graduate teaching assistant. The program is designed to welcome and integrate freshman students to campus and to the Department. ICS students, on average, have grades one full letter grade higher in CH301H and CH302H than those not taking ICS in conjunction with those courses.

PUBLICATIONS**Publications****Alan Campion**

1. Alan Campion and Ffrancon Williams, "Effect of Crystalline Phase on Thermal Recovery of the Photobleachable Electron-Excess Center in Gamma Irradiated Succinonitrile", *J. Chem. Phys.* **54**, 4510 (1971).
2. Alan Campion and Ffrancon Williams, "Hydrogen Atom Abstraction by Methyl Radicals in Methanol Glasses at 67-77°K", *J. Amer. Chem. Soc.* **94**, 7633 (1972).
3. Alan Campion, John A. Ghormley and Ffrancon Williams, "Pulse Radiolysis Study of Succinonitrile in the Rotator Phase", *J. Amer. Chem. Soc.* **94**, 6301 (1972).
4. Alan Campion and M.A. El-Sayed, "The Mechanism of the S₁-T₁ Non-Radiative Process in Duraldehyde", *J. Phys. Chem.* **80**, 2201 (1976).
5. Alan Campion and M.A. El-Sayed, "Spin Labels and the Mechanism of the S₁-T₁ Nonradiative Process in Duraldehyde: Possible Manifestations of Pseudo-Jahn-Teller Forces on Nonradiative Processes", *Proceedings of the 12th Informal Conference on Photochemistry, NBS Special Publication* **256**, 271 (1976).
6. Phaedon Avouris, Alan Campion and M.A. El-Sayed, "Luminescence and Intersystem Crossing Processes in Camphorquinone Crystals", *Chem. Phys.* **19**, 147 (1977).
7. Alan Campion, James Turner and M.A. El-Sayed, "Time-Resolved Resonance Raman Spectroscopy of Bacteriorhodopsin", *Nature* **265**, 659 (1977).
8. James Turner, Alan Campion and M.A. El-Sayed, "Time-Resolved Resonance Raman Spectroscopy of Bacteriorhodopsin on the Millisecond Timescale", *Proc. Nat'l. Acad. Sci. USA*, **74**, 5212 (1977).
9. Phaedon Avouris, Alan Campion and M.A. El-Sayed, "Phonon Assisted Site-to-Site Electronic Energy Transfer Between Eu³⁺ Ions in an Amorphous Solid", *Chem. Phys. Lett.* **50**, 9 (1977).
10. Phaedon Avouris, Alan Campion and M.A. El-Sayed, "Variations in Homogeneous Fluorescence Linewidths and Electron-Phonon Coupling Within an Inhomogeneous Spectral Profile", *J. Chem. Phys.* **67**, 3397 (1977).
11. James Turner, Alan Campion and M.A. El-Sayed, "Resonance Raman Kinetic Spectroscopy of Bacteriorhodopsin on the Microsecond Timescale", *Biophys. J.* **20**, 369 (1977).
12. Phaedon Avouris, Alan Campion and M.A. El-Sayed, "Laser Studies of Electron-Phonon Interactions in Amorphous Solids: Homogeneous Fluorescence Line-Broadening and Spectral Diffusion", *Proc. Soc. Photo.-Opt. Instrum. Eng.* **113**, 57 (1977).

13. Alan Campion, James Turner and M.A. El-Sayed, "Time-Resolved Resonance Raman Spectroscopy: Application to the Photosynthetic Cycle of Bacteriorhodopsin" Proc. Soc. Photo.-Opt. Instrum. Eng. **113**, 128 (1977).
14. M.A. El-Sayed, Alan Campion and Phaedon Avouris, "Temperature, Temporal and Concentration Dependence of the Laser-Narrowed 5D_0 - 7F_0 Fluorescence Lineshape of Eu^{3+} in Glasses", J. Mol. Struct. **46**, 355 (1978).
15. Anne-Marie Merle, Alan Campion and M.A. El-Sayed, "The Two-Photon Excitation Spectrum of Triphenylene in n-Heptane Single Crystals", Chem. Phys. Lett. **57**, 496 (1978).
16. A. Campion, A.R. Gallo, C.B. Harris, H.J. Robota and P.M. Whitmore, "Electronic Energy Transfer to Metal Surfaces: A Test of Classical Image Dipole Theory at Short Distances", Chem. Phys. Lett. **73**, 447 (1980).
17. Alan Campion, J. Keenan Brown and V.M. Grizzle, "Surface Raman Spectroscopy Without Surface Enhancement", J. Vac. Sci. Tech. **20**, 893 (1982).
18. Alan Campion, J. Keenan Brown and V.M. Grizzle, "Surface Raman Spectroscopy Without Enhancement Nitrobenzene on Ni (111)", Surface Sci. **115**, L153 (1982).
19. Alan Campion, "Surface Raman Spectroscopy Without Enhancement: Pyridine on Ag (111)", J. Electron Spectrosc. Relat. Phenom. **29**, 397 (1983).
20. Alan Campion and David R. Mullins, "Normal Raman Scattering From Pyridine Adsorbed on the Low-Index Faces of Silver", Chem. Phys. Lett. **94**, 576 (1983).
21. Alan Campion and David R. Mullins, "Normal (Unenhanced) Raman Scattering From Pyridine Adsorbed on the Low-Index Faces of Silver", in Surface Studies with Lasers, Springer Series on Chemical Physics, F.R. Aussenegg, A. Leitner and M.E. Lippitsch, eds., Springer-Verlag, Berlin (1983).
22. Alan Campion, Vickie M. Grizzle, David R. Mullins and J. Keenan Brown, "Raman Spectroscopy of Molecules Adsorbed on Single Crystal Metal Surfaces Without Enhancement", J. Physique **C10**, 341 (1983).
23. Alan Campion, "Surface Enhanced Raman Scattering", Comments on Solid State Physics **11**, 107 (1984). (Invited Review).
24. Alan Campion and David R. Mullins, "Angle-Resolved Surface Raman Spectroscopy", J. Phys. Chem. **88**, 8 (1984).
25. A.-W. Mau, N. Kakuta, C.B. Huang, M. Krishnan, A.J. Bard, A. Campion, M.A. Fox, S.E. Webber and J.M. White, " H_2 Photoproduction by Nafion/CdS/Pt Films in $\text{H}_2\text{O}/\text{S}^{-2}$ Solutions", J. Amer. Chem. Soc. **106**, 6537 (1984).
26. Vickie M. Hallmark and Alan Campion, "Unenhanced Raman Spectroscopy of Benzene Adsorbed on Single Crystal Silver Surfaces: Evidence for Surface Selection Rules", Chem. Phys. Lett. **110**, 561 (1984).

27. David R. Mullins and Alan Campion, "Unenhanced Raman Scattering From Pyridine Chemisorbed on a Stepped Silver Surface: Implications for Proposed SERS Mechanisms", *Chem. Phys. Lett.* **110**, 565 (1984).
28. N. Kakuta, M. Finlayson, A.J. Bard, A. Campion, M.A. Fox, S.E. Webber and J.M. White, "Surface Analysis of Semiconductor-Incorporated Polymer Systems I. Nafion and CdS-Nafion", *J. Phys. Chem.* **89**, 48 (1985).
29. N. Kakuta, K.H. Park, M.F. Finlayson, A. Ueno, A.J. Bard, A. Campion, M.A. Fox, S.E. Webber and J.M. White, "Photoassisted Hydrogen Production Using Visible Light and Coprecipitated ZnS.CdS Without a Noble Metal", *J. Phys. Chem.* **89**, 732 (1985).
30. Alan Campion and David R. Mullins, "Unenhanced Raman Scattering From Pyridine Adsorbed on Stepped and Kinked Silver Surfaces Under Ultrahigh Vacuum", *Surface Sci.* **158**, 263 (1985).
31. Alan Campion, "Normal (Unenhanced) Raman Spectroscopy of Molecules Adsorbed on Surfaces", *J. Vac. Sci. Technol.* **B3**, 1404 (1985).
32. N. Kakuta, J.M. White, A. Campion, A.J. Bard, M.A. Fox, S.E. Webber and M.F. Finlayson, "Surface Spectroscopy of Pt/CdS/Nafion Systems", in The New Surface Science in Catalysis, A.C.S. Symposium Series, **288**, 566 (1985).
33. M.F. Finlayson, K.H. Park, N. Kakuta, A. Ueno, A.J. Bard, A. Campion, M.A. Fox, S.E. Webber and J.M. White, "Silica-Supported ZnS.CdS Mixed Semiconductor Catalysts for Photogeneration of Hydrogen", *J. Phys. Chem.* **89**, 3828 (1985).
34. Alan Campion, "Raman Spectroscopy of Molecules Adsorbed on Solid Surfaces", in Annual Review of Physical Chemistry, Volume 36, Annual Reviews, Inc. Palo Alto, p.549 (1985).
35. N. Kakuta, A.J. Bard, A. Campion, M.A. Fox, S.E. Webber and J.M. White, "Surface Analysis of Semiconductor Incorporated Polymer Systems. 2. Pt-Nafion and Pt-CdS-Nafion", *Surf. and Interface Analysis*. Vol. 7, No. 6, (1985).
36. N. Kakuta, K.H. Park, M.F. Finlayson, A.J. Bard, A. Campion, M.A. Fox, S.E. Webber and J.M. White, "Surface Analysis of Polymer Systems. 3. ZNS-CdS-Nafion", *J. Phys. Chem.* **89**, 5028 (1985).
37. Alan Campion, "Raman Spectroscopy of Adsorbed Molecules", in Chemistry and Physics of Solid Surfaces, Springer Series in Surface Sciences 5, Volume 6, Springer-Verlag, p.261 (1986).
38. Vickie M. Hallmark and Alan Campion, "A Modification of Image Dipole Selection Rules as Applied to Surface Raman Scattering", *J. Chem. Phys.* **84**, 2942 (1986).
39. Vickie M. Hallmark and Alan Campion, "Selection Rules for Surface Raman Spectroscopy: Experimental Results", *J. Chem. Phys.* **84**, 2933 (1986).

40. M.F. Finlayson, B.L. Wheeler, N. Kakuta, K.H. Park, A.J. Bard, A. Campion M.A. Fox, S.E. Webber and J.M. White, "Determination of Flatband Position of CdS Crystals, Films and Powders by Photocurrent Impedance Techniques - Photoredox Reaction Mediated by Intra Band States", *J. Phys. Chem.* **89**, 5676 (1985).
41. D.M. Harradine and Alan Campion, "Surface Raman Spectroscopy of Pyridine Adsorbed on Ni (111) and Ni (100) Surfaces", *J. Vac. Sci. Technol.* **3**, 1467 (1986).
42. R. Dabestani, X. Wang, A.J. Bard, A. Campion, M.A. Fox, S.E. Webber and J.M. White, "Photoinduced Oxidation of Bromide to Bromine on Irradiated Platinized TiO₂ Powders and Platinized TiO₂ Particles Supported in Nafion Films", *J. Phys. Chem.* **90**, 2729 (1986).
43. E. Smotkin, A.J. Bard, A. Campion, M.A. Fox, T. Mallouk, S.E. Webber and J.M. White, "Bipolar TiO₂/Pt Semiconductor Photoelectrodes and Multielectrode Arrays for Unassisted Photolytic Water Splitting", *J. Phys. Chem.* **90**, 4604 (1986).
44. L. Porter Powell and Alan Campion, "Rapid Headspace Analysis in Sealed Drug Vials by Multichannel Raman Spectrometry", *Anal. Chem.* **58**, 2350 (1986).
45. D. Harradine and Alan Campion, "Surface Raman Spectroscopy Without Enhancement: Pyridine Adsorbed on Ni (111) and Ni (100)", *Chem. Phys. Lett.* **135**, 501 (1987).
46. A. Sobczynski, A.J. Bard, A. Campion, M.A. Fox, T.E. Mallouk, S.E. Webber and J.M. White, "Photoassisted Hydrogen Generation: Pt and CdS Supported on Separate Particles", *J. Phys. Chem.* **91**, 3316 (1987).
47. Y. Dai, J.S. Swinnea, H. Steinfink, J.B. Goodenough and A. Campion, "Raman Spectroscopy of the High T_c Superconductor YBa₂Cu₃O₇ and the Semiconductor YBa₂Cu₃O₆", *J. Amer. Chem. Soc.* **109**, 5291 (1987).
48. X. Jiang and A. Campion, "Chemical Effects in Surface-Enhanced Raman Scattering: Pyridine Chemisorbed on Silver Adatoms on Rh (100)", *Chem. Phys. Lett.* **Vol. 140, No. 1**, 95 (1987).
49. Alan Campion, "Raman Spectroscopy", in Vibrational Spectroscopy of Molecules on Surfaces, J.T. Yates and T.E. Madey, eds., Volume 1, Plenum Press, New York, p. 345 (1987).
50. L. Persaud, A.J. Bard, A. Campion, M.A. Fox, T.E. Mallouk, S.E. Webber and J.M. White, "A New Method for Depositing Platinum Exclusively on the Internal Surface of Zeolite L.", *Inorg. Chem.* **26**, 3825 (1987).
51. Alan Campion and W.H. Woodruff, "Multichannel Raman Spectroscopy", *Anal. Chem.* **59**, 1299A (1987).
52. L. Persaud, A.J. Bard, A. Campion, M.A. Fox, T.E. Mallouk, S.E. Webber and J.M. White, "Photochemical Hydrogen Evolution via Singlet State Electron Transfer Quenching of Zinc

- tetra(N-methyl-4-pyridyl) porphyrin Cations in a Zeolite-L Based System", *J. Amer. Chem. Soc.* **109**, 7309 (1987).
53. D.R. Porterfield and A. Campion, "Fluorescence-Free Scanning Raman Spectroscopy", *J. Amer. Chem. Soc.* **110**, 408 (1988).
54. M.F. Finlayson, K.H. Park, N. Kakuta, A.J. Bard, A. Campion, M.A. Fox, S.E. Webber and J.M. White, "Luminescence of Mixed ZnS.CdS Semiconductor Catalysts in Nafion Polymer Films", *J. Luminescence* **39**, 205 (1988).
55. S. Cervera-March, E.S. Smotkin, A.J. Bard, A. Campion, M.A. Fox, T. Mallouk, S.E. Webber and J.M. White, "Modeling of Bipolar Semiconductor Photoelectrode Arrays for Electrolytic Processes", *J. Electrochemical Society* **Vol. 135, No. 3**, 567 (1988).
56. C. Shannon and A. Campion, "Unenhanced Raman Scattering as an In-Situ Probe of the Electrode-Electrolyte Interface: 4-Cyanopyridine Adsorbed on a Rhodium Electrode", *J. Phys. Chem.* **92**, 1385 (1988).
57. E.S. Smotkin, S. Cervera-March, A.J. Bard, A. Campion, M.A. Fox, T. Mallouk, S.E. Webber and J.M. White, "Bipolar CdSe/CoS Semiconductor Photoelectrode Arrays for Unassisted Photolytic Water Splitting", *J. Phys. Chem.* **91**, 6 (1987).
58. R. Dabestani, A.J. Bard, A. Campion, M.A. Fox, T.E. Mallouk, S.E. Webber and J.M. White, "Sensitization of Titanium Dioxide and Strontium Titanate Electrodes by Ruthenium(II)tris(2,2'-bipyridine-4,4'-dicarboxylic acid) and Zinc Tetrakis(4-carboxyphenyl) Porphyrin" "An Evaluation of Sensitization Efficiency for Component Photoelectrodes in a Multipanel Device", *J. Phys. Chem.* **92**, 1872 (1988).
59. A. Sobczynski, A. Yildiz, A.J. Bard, A. Campion, M.A. Fox, T.E. Mallouk, S.E. Webber and J.M. White, "Tungsten Disulfide: A Novel Hydrogen Evolution Catalyst for Water Decomposition", *J. Phys. Chem.* **92**, 2311 (1988).
60. Y. Dai, A. Manthiram, A. Campion and J.B. Goodenough, "XPS Evidence for Peroxide in 123 Copper Oxides Containing Disordered or Excess Oxygen", *Phys. Rev. B.* **Vol. 38, No. 7**, 5091 (1988).
61. X. Jiang, K. Lloyd and A. Campion, "Chemical Effects in Surface-Enhanced Raman Scattering", *Proc. from 19th Solvay Conference on Surface Science* (in press).
62. E.S. Smotkin, Chongmok Lee, A.J. Bard, A. Campion, M.A. Fox, T. Mallouk, S.E. Webber and J.M. White, "Size Quantization Effects in Cadmium Sulfide Layers Formed by a Langmuir-Blodgett Technique", *Chem. Phys. Letters* **152**, 265 (1988).
63. Attila Yildiz, Andrzej Sobczynski, A.J. Bard, A. Campion, M.A. Fox, T.E. Mallouk S.E. Webber and J.M. White, "Sensitized Polypyrrole-coated Semiconducting Powders as Materials in Photosystems for Hydrogen Generation", *Langmuir* **5**, 148 (1989).

64. S. Akhter, K. Allan, D. Buchanan, J.A. Cook, A. Campion and J.M. White, "XPS and IR Study of X-Ray Induced Degradation of PVA Polymer Film", *Applied Surface Science* **35**, 241 (1988).
65. Andrzej Sobczynski, A.J. Bard, A. Campion, M.A. Fox, T.E. Mallouk, S.E. Webber and J.M. White, "Catalytic Hydrogen Evolution Properties of Nickel-Doped Tungsten Disulfide", *J. Phys. Chem.* **93**, 401 (1989).
66. K.G. Lloyd, B. Roop, A. Campion and J.M. White, "Surface Photochemistry: V. Preparation of Ethyl Fragments on Pt (111)", *Surface Sci.* **214**, 227 (1989).
67. J.B. Goodenough, A. Manthiram, Y. Dai and A. Campion, "Oxygen Clustering in 123 Copper Oxides Having Disordered or Excess (>7.0) Oxygen", *Supercond. Sci. Tech.* **1**, 187 (1988).
68. K.G. Lloyd, A. Campion and J.M. White, "Surface Photochemistry: 7. Synthesis on Pt(111) of Surface Ethyl Groups and their Rearrangement to Ethylidyne", *Catalysis Letters* **2**, 105 (1989).
69. B. Roop, K.G. Lloyd, S.A. Costello, A. Campion and J.M. White, "Surface Photochemistry: 8. CH₃Cl and Coadsorbed CD₃Br-CH₃Cl", *J. Chem. Phys.* **91** (8), 5103 (1989).
70. B. Roop, Y. Zhou, Z.-M. Liu, M.A. Henderson, K.G. Lloyd, A. Campion and J.M. White, "Surface Photochemistry: 9. Photochemistry of Small Molecules on Metal Surfaces", *J. Vac. Sci. & Tech.* **A7** (3), 2121 (1989).
71. X-Y. Zhu, S.R. Hatch, A. Campion and J.M. White, "Surface Photochemistry: II. Wavelength Dependences of Photo-Induced Dissociation, Desorption and Rearrangement of O₂ on Pt(111)", *J. Chem. Phys.* **91** (8), 5011 (1989).
72. Scott S. Perry, Curtis Shannon and Alan Campion, "Raman Spectroscopy of Molecules Adsorbed on Solid Surfaces", *Proc. of SPIE Lasers and Optics Symposium.* 1-7 (1989).
73. S.K. Doorn, J.T. Hupp, D.R. Porterfield, A. Campion and D.B. Chase, "Resonance Enhanced Raman Scattering in the Near Infrared. Preliminary Studies of Charge Transfer in the Symmetric Dimers (2,2'bpy)₂ClRu-4,4'bpy-RuCl(2,2'bpy)₂^{4+/3+/2+}(H₃N)₅Ru-4,4'bpy-Ru(NH₃)₅^{6+/5+/4+}, and (NC)₅Fe-4,4'bpy-Fe(CN)₅^{4-/5-/6-}", *J. Amer. Chem. Soc.* **112** (13), 4999 (1990).
74. E.S. Smotkin, L.K. Rabenberg, K. Salomon, A.J. Bard, A. Campion, M.A. Fox, T.E. Mallouk, S.E. Webber and J.M. White, "Ultrasmall Particles of CdSe and CdS Formed in Nafion by an Ion-dilution Technique", *J. Phys. Chem.* **94**, 7543 (1990).
75. K. Allan, A. Campion, J. Zhou, and J.B. Goodenough, "An XPS Study of LaCuO₃", *Physical Review B* **41** (16), 11 572 (1990).

76. Curtis Shannon and Alan Campion, "Raman Spectroscopic Investigation of the Adsorption of Acetonitrile and Methanol on Si(100)-2x1", *Surface Science* **227**, 219-223 (1990).
77. S.R. Hatch, X.-Y. Zhu, A. Campion and J.M. White, "Surface Photochemistry XII: Quenching of Surface Photochemistry by a Spacer Layer", *J. Phys. Chem.* (submitted).
78. S.R. Hatch, X.-Y. Zhu, J.M. White and Alan Campion, "Surface Photochemistry XV: On the Role of Substrate Excitation", *J. Chem. Phys.* **92** (4), 2681 (1990).
79. Akihiko Kudo, M. Steinberg, A.J. Bard, Alan Campion, M.A. Fox, T.E. Mallouk, S.E. Webber, and J.M. White, "Reduction at 300 K of NO by CO over Supported Platinum Catalysts", *J. Catal.* **124**, 565 (1990).
80. Akihiko Kudo, Menachem Steinberg, Allen J. Bard, Alan Campion, Marye Anne Fox, Thomas E. Mallouk, Stephen E. Webber, and John M. White, "Photoactivity of Ternary Lead - Group IVB Oxides for Hydrogen and Oxygen Evolution", *Catal. Letters* **5**, 61 (1990).
81. Akihiko Kudo, Menachem Steinberg, Allen J. Bard, Alan Campion, Marye Anne Fox, Thomas E. Mallouk, Stephen E. Webber, and John M. White, "Photoelectro-chemical Properties of Titanium Dioxide Electrodes Prepared from a Titanium-Aluminum Alloy", *J. Electrochem. Soc.* **137** (12), 3846 (1990).
82. A. Sobczynski, J.M. White, A.J. Bard, A. Campion, M.A. Fox, T.E. Mallouk, and S.E. Webber "Photochemical Properties of Ultrathin TiO₂ Films prepared by Chemical Vapor Deposition", *J. Photochem. Photobiol.* **50**, 283 (1989).
83. Scott S. Perry and Alan Campion "A Raman Spectroscopic Study of the Polyimide/Ag (110) Interface", *Surface Science Letters* **234**, L275 (1990).
84. Bradley R. Arnold, Juliusz G. Radziszewski, Alan Campion, Scott S. Perry, and Josef Michl "The Raman Spectrum of the Matrix-Isolated Cyclobutadiene. Evidence for Environmental Hindrance to Heavy-Atom Tunneling?", *J. Am. Chem. Soc.* **113**, 692 (1991).
85. Alan Campion and Scott S. Perry "Charge Coupled Devices Shine for Raman Spectroscopy", *Laser Focus World*, **26**, 113-114, 116, 118, 120, 122, 124 (1990).
86. S.R. Hatch, X.-Y. Zhu, J.M. White and Alan Campion, "Photoinduced Pathways to Dissociation and Description of Dioxygen on Ag(110) and Pt(111)", *J. Phys Chem* **95**, 1759 (1991).
87. J.M. White, S. Hatch, X.-Y. Zhu and Alan Campion, "Surface Photochemistry. 13. UV-photochemistry of Adsorbed O₂ on Pt(111)", *Vacuum* **41**, 282 (1990).
88. S.R. Hatch and Alan Campion, "Surface Photochemistry: Evidence for Hot Electron Induced Dissociation in a Strongly Bound System", *J. Elec. Spectr. & Rel. Phen* **54/55**, 509 (1990).
89. Scott S. Perry and Alan Campion, "Polyimide Interfaces Studied by Surface Raman Spectroscopy," *J. Elec. Spectr. & Rel. Phen.* **54/55**, 933 (1990).

90. Alan Campion, "Raman Spectroscopy of Molecules Adsorbed on Surfaces: Progress, Issues and Prospects," *J. Elec. Spectr. & Rel. Phen.* **54/55**, 877 (1990).
91. Scott S. Perry and Alan Campion, "A Raman Spectroscopic Study of Polyimide Precursors Adsorbed on Silicon (100) and Silicon Oxide," *Surface Science* **259**, 207 (1991).
92. S.R. Hatch and Alan Campion, "Photoinduced Pathways to Dissociation and Desorption of Dioxygen on Ag(110) and Pt(111)," in Surface Science of Catalysis: In-Situ Probes and Reaction Kinetics, ACS Symposium Series, **482**, 21 (1992).
93. S.R. Hatch and Alan Campion, "The Role of Substrate Excitation in the Photochemistry of Dioxygen on Ag(110)," *J. Vac. Sci. Tech. A*, **10**, 4 (1992).
94. Carolyn F. Hoener, Kristi Allan, Allen J. Bard, Alan Campion, Marye Anne Fox, Thomas E. Mallouk, Stephen E. Webber and J. Michael White, "Demonstration of a Shell-Core Structure in Layered CdSe-ZnSe Small Particles by X-ray Photoelectron and Auger Spectroscopies", *J. Phy Chem* **96**, 3812 (1992).
95. A. Mahajan, B.K. Kellerman, N.M. Russell, S. Banerjee, A. Campion, J.G. Ekerdt, A. Tasch, J.M. White, and D.J. Bonser, "Surface Chemistry of Diethylsilane and Diethylgermane on Si(100): An Atomic Layer Epitaxy Approach", *J. Vac. Sci. Technol. A* **12**(4), 2265-2270 (1994).
96. B. Darlington, M. Foster, A. Campion, "Adsorption and Reactions of Diethylsilane on Si(100)", *Surface Science Letters* **304** (1994) L407-L412.
97. M. Foster, B. Darlington, J. Scharff, A. Campion, "Adsorption and Reactions of Ethylsilane on Si(100)", *Surface Science* **315** (1994) L947-L952.
98. M.R. Tesauro, S. Banerjee, A. Campion, "Removal of Hydrogen from 1x1 Dihydride Passivated Si(100) by Low Energy Rare Gas Ions: Implications for RPCVD", *Surface Science Letters* **318** (1994) L1171-L1174.
99. N. Hackerman, A. Campion, "Almost 50 Years of Physical Chemistry at the University of Texas", *Ann. Rev. Phys. Chem.* **44** 1-12 (1993).
100. B.K. Kellerman, A. Mahajan, N.M. Russell, J.G. Ekerdt, S.K. Banerjee, A.F. Tasch, A. Campion, J.M. White, and D.J. Bonser, "Adsorption and Decomposition of Diethylsilane and diethylgermane on Si(100): Surface Reactions for an ALE Approach to Column IV Epitaxy", *J. Vac. Sci. Tech. A* **13**(4) (1995) 1819-1825.
101. D. Melamed, B. Darlington, D. J. R. Brook, H. L. Pan, A. Campion and M. A. Fox, "Structural Characterization of Solid Self-Ordered Thin Films of Zinc (II) and Palladium (II) Octakis (\square -decoxyethyl) Porphyrin", *J. Phys. Chem.* **98**(36), 8971- 8976 (1994).
102. M. Foster, B. Darlington, J. Scharff and A. Campion, "Surface Chemistry of Alkylsilanes Si(100) 2x1", *Surface Science* **375** (1997) 35-44.

103. M.R. Tesauro, Grant Underwood, Bruce K. Kellerman, A. Campion, "Temperature Programmed Evolution of Low-Energy, Rare-Gas Ions Implanted in Si (100)", *Surface Science Letters* **330** (1995) L633-L638.
104. A. Campion, J.E. Ivanecky III, C.M. Child, M. Foster, "On the Mechanism of Chemical Enhancement in Surface-Enhanced Raman Scattering", *Journal American Chemical Society* Vol. **117** No. 47 (1995) 11807-11808.
105. C.M. Child, Jeffrey E. Fieberg and Alan Campion, "Surface Chemistry of Polyimide Formation on Cu(111)", *Surface Science Letters* **372**(1-3) (1997) L254-L260.
106. C.M. Child, M. Foster, J.E. Ivanecky III, Scott S. Perry, and Alan Campion, "Surface Raman Spectroscopy as a Probe of Surface Chemistry", *Proc. SPIE-Int. Soc Opt. Eng.*, **2547**, 2-11 (1995).
107. S.S. Perry, S.R. Hatch and A. Campion, "On the Role of Electromagnetic Field Gradients in Surface Raman Scattering by Molecules Adsorbed on Single Crystal Metal Surfaces", *J. Chem. Phys.* **104** (17) 6856-6859 (1996).
108. J. E. Ivanecky III, C. M. Child, A. Campion, "Surface Chemistry of Polyimide Precursors on Cu(111)", *Surface Science Letters* **325** (1995) L428-L434.
109. Mark R. Tesauro, Grant Underwood, John Lowell, and Alan Campion, "Removal of Hydrogen From 2H::Si(100) by Sputtering and Recoil Implantation", 1997 IEEE 591-594.
110. Grant Underwood, Mark R. Tesauro, B.K. Kellerman and Alan Campion, "The Implantation and Diffusion of 100-500eV He and Ar in Si(100)", (in preparation).
111. Patanjali Kambhampati, C.M. Child and Alan Campion, "On the Role of Charge-Transfer Resonances in the Chemical Mechanism of Surface-Enhanced Raman Scattering", *J. Chem. Soc., Faraday Trans.*, 1996, **92**(23), 4775-4780.
112. C.M. Child, Jeffrey E. Fieberg and Alan Campion, "Unenhanced Surface Raman Spectroscopic Study of the Chemistry of Polyimide Formation on Cu(111)", *Workshop Proceeding, Second International Conference, Namur, Belgium 12-16 August 1996*.
113. Patanjali Kambhampati, C.M. Child, Michelle C. Foster and Alan Campion, "On the Chemical Mechanism of Surface Enhanced Raman Scattering: Experiment and Theory", *J. Chem. Phys.*, Vol. **108**, No. 12, 22 March 1998.
114. Mark R. Tesauro, Grant Underwood, Sanjay Banerjee, and Alan Campion, "Removal of hydrogen from 2H::Si(100) by Sputtering and Recoil Implantation: Investigation of an RPCVD Growth Mechanism", *Surface Science* **415** (1998) 37-47.
115. Alan Campion and Patanjali Kambhampati, "Surface-Enhanced Raman Scattering", *Chemical Society Reviews*, 1998, volume 27, 241-250.

116. Patanjali Kambhampati, Michelle C. Foster and Alan Campion, "Two Dimensional Localization of Adsorbate/Substrate Charge-Transfer Excited States of Molecules Adsorbed on Metal Surfaces", *J. Chem. Phys.*, Vol. **110**, No. 1, 551-558 January 1999
117. Patanjali Kambhampati and Alan Campion, "Chemical Enhancement in Surface Enhanced Raman Scattering", Conference Proceeding, International Conference on Raman Spectroscopy, Cape Town, South Africa September 6-11, 1998.
118. Patanjali Kambhampati and Alan Campion, "Surface Enhanced Raman Scattering as a Probe of Adsorbate-Substrate Charge-Transfer Excitations", *Surface Sci.* **427-428** (1999) 115-125.
119. Patanjali Kambhampati, Ok-Keun Song and Alan Campion, "Probing Photoinduced Charge Transfer at Atomically Smooth Metal Surfaces using Surface Enhanced Raman Scattering", *Phys. Stat. Sol.* **175** (1999) 233-239.
120. Lynette K. Ballast, Tim Z. Hossain and Alan Campion, "Raman spectroscopy: a multifunctional analysis tool for microelectronics manufacturing." *Proc. SPIE-Int. Soc. Opt. Eng.* (2000), 4182(Process Control and Diagnostics), 221-230.
121. Alan Campion; Charles E. May and Tim Z. Hossain "Apparatus and method for determining depth profile characteristics of a dopant material in a semiconductor device." U.S. Patent 6.151,119 (2000)
- 122 "Carrier confinement in almost pure Ge channels grown on Si substrates by rapidly graded Si_{1-x}Ge_x growth", S. Joshi, S. Dey, K. Jones, M. Chaumont, A. Campion, D. Kelly, J Donnelly and S.K. Banerjee, presented, Electronic Materials Conference, July 2005.
123. "Ge channel MOSFETs fabricated using thin Ge on strained SiGe epitaxial layers using bulk Si substrates, HfO₂ gate dielectric and TaN metal gate electrode" Sachin Joshi, S. Dey, D. Garcia-Gutierrez, M. Chaumont, M. Yacaman, A. Campion, D Kelly, J. Donnelly and S.K. Banerjee, Semiconductor Research Corporation, Techcon, October 2005
124. "Carrier confinement in almost pure Ge channels grown on Si substrates by rapidly graded Si_{1-x}Ge_x growth", Sachin Joshi, S. Dey, K. Jones, M. Chaumont, A. Campion, D. Q. Kelly, J Donnelly and S.K. Banerjee, Electronic Materials Conference, Santa Barbara, 2005
125. "Pure Ge epitaxial growth on thin strained SiGe graded layers on bulk Si substrate for high channel mobility MOSFET", S. Dey, S. Joshi, D. Garcia-Gutierrez, M. Chaumont, M. Jose-Yacaman, A. Campion and S.K. Banerjee, *J. Elec Mat.* Vol. 35, No. 8, pp 1607 -1612, 2006
126. "Strained-Si MOSFETs on ultra-thin relaxed dislocation blocking Si_{1-x}Ge_x buffer layer with high-k dielectric and metal gate", S. Dey, S. Joshi, M. Chaumont, A. Campion, S.K. Banerjee, submitted *Elec. Dev. Lett.*, 2006
127. "Ultra-thin Si_{1-x}Ge_x dislocation blocking layers for Ge /strained Si CMOS devices" Sachin Joshi, Sagnik Dey, Michelle Chaumont, Alan Campion and Sanjay K. Banerjee, International Symposium on Advanced Gate Stack Technology, September 2006

128. Sachin Joshi, Sagnik Dey, Michelle Chaumont, Alan Campion and Sanjay K. Banerjee, "Ultra-Thin $\text{Si}_{1-x}\text{Ge}_x$ Dislocation Blocking Layers For Ge/Strained Si CMOS Devices", *Journal of Electronic Materials* **36** (2007) 641-647.
129. Jinggang Lu, George Rozgonyi, Mike Seachrist, Michelle Chaumont and Alan Campion, "Effect of Strained – Si Layer thickness on Dislocation Distribution and SiGe Relaxation in Strained Si/SiGe Heterostructures" *J. Appl. Phys.* **104** 07904 (2008).
130. Grant Underwood, Lynette Ballast and Alan Campion, "Reactions of Disilane with the Deuterium Terminated Ge(100) 2×1 Surface", *Surf. Sci.* **602**, 2009 – 2016 (2008)
131. Grant Underwood, Lynette Ballast and Alan Campion, "On the Existence of a Stable, Room Temperature Dihydride-Terminated Ge(100) Surface in Ultrahigh Vacuum", *Surf. Sci.* **602** 2055 – 2060 (2008)
132. P. Kohli, R. Wise, G. Braithwaite, M. T. Currie, A. Lochtefeld, MK. Rodder, J. Bennett, M. Gotowski, B. Nguyen, R. Cleavelin, S. Yu, M. Pas, S. McCoy, A. Campion and M. Chaumont, "Ultrashallow Junction Formation in Strained Si/ $\text{Si}_{1-x}\text{Ge}_x$ Using Flash Assist RTA" *Electrochemical Society Proceedings* **2004 – 2007** 1113 - 1114. (2004)