



## **CURRENT LAB MEMBERS:**

Post-doctoral Fellows: Zhijie Wang, Jennifer Schuttlefield, Kedar Manandhar, Chaminda Hettige, Yongqi Liang

Graduate Students: Justin Sambur, Shannon Riha, Rachel Liu, Dae-Jin Choi, Fei Liu, Craig Markum, Chunping Jiang

Undergraduate Students: Chris Averill

## **FORMER POST-DOCTORAL FELLOWS:**

Jianghua He 2007-08, Robert Herrick 2007-08, Manashi Nath 2006-08, Bengt Jaeckel, 2005-07; Nancy Ruzycski 2003-05; Shin Ushiroda, 2002-04; David Soltz, 1996-98; Norihiko Takeda 2000-02; Rudy Schlaf 1996-99; Shumei Dou 1992-94; Jaap Folmer 1982-84; Lucilla Fornarini 1982; David Rath 1980

## **FORMER GRADUATE STUDENTS:**

Graduated in 2007: Yunfeng Lu, Ph.D., Dave Seley, Ph.D., Michael Woodhouse, Ph.D., Anna Chick, Ph.D

2004: Joon Bum Park, Ph.D.

2003: C. Brian France, Ph.D.

2002: Michelle Stawasz, Ph.D., Laura Sharp, Ph.D., Paul Schroeder, Ph.D.

2000: Akiko Fillinger, Ph.D., Mark Nelson, Ph.D.

1998: Y.C. Wen, Ph.D., David Sampson, Ph.D.

1997: William Donahue, Ph.D.

1996: Darrel Louder, Ph.D.

1981: (Iowa State University): Kam Keung Kam, Ph.D.

1980: (Iowa State University): Duane Canfield, M.S.

## **FORMER UNDERGRADUATE STUDENTS:**

CSU students: Zach Dance (Ph.D. student at Northwestern U.), Jeremiah Forsythe (Ph.D. student at Louisiana State U.), Jill Tomlinson (Ph.D. student at Purdue U.), Jeff Head (PhD Student at Arizona), Melissa Gelwicks

NSF-REU Program participants: Jimmy Nelson, Lesanna Dohbraner, Shannon Riha, Stephanie Hamilton, Christine Erickson, Brenda Randall, Adam Walker, Stacy Althaus, Colin Bradley II

## **FORMER VISITING SCIENTISTS:**

Michael Kanis, Ph.D., 2009, Gil-Sung Kim Ph.D., 2007, Rulin Wang, Ph.D., 2007-2008, Alexander Petrov, Ph.D., 2003; Yasuo Kaneda, Ph.D., 1997-98; Shinji Yae, Ph.D., 1995; Hideki Masuda, Ph.D., 1992; Wolfram Jaegermann, Ph.D., 1986; Claude Levy, Ph.D., 1980; Franco Decker, Ph.D., 1979

## **TEACHING EXPERIENCE/COURSES TAUGHT**

C111: General Chemistry  
C111H: Honors General Chemistry  
C577: Surface Chemistry  
C334: Quantitative Analysis Laboratory  
C537: Electrochemical Methods  
C517: Chemistry of Electronic Materials  
C493: Senior Seminar for Chemistry Majors  
C530: Advanced Topics in Chemical Analysis  
HP192: Honors Seminar – Energy and Society  
IU198: Freshman Research Laboratory

## **FUNDING HISTORY/GRANTS & AWARDS**

Surface Binding and Organization of Sensitizing Dyes on Metal Oxide Single Crystal Surfaces, DOE-BES, \$461k, 4/1/06-3/31/09

Inorganic Nanotubes as Chemical Sensors, NSF, \$436k, 9/1/05-8/31/08

Investigations of Polyaromatic Hydrocarbon Adsorption on Metals: Electronic Structure, Ordering and Chirality, NSF, \$345k, 7/1/05-6/30/08

Combinatorial Approach to Realization of Efficient Water Photoelectrolysis, DOE-BES, \$590k, 9/01/05-5/31/08

Fundamental Studies of Novel Inorganic Fullerenes, NSF-DMR, \$450k, 6/01 - 5/04

Design and Development of High-Resolution Electrochemical NMR (D. Buttry – PI, B. A. Parkinson, G. Maciel, J. Yarger, Co-PIs), Keck Foundation, \$800k, 1/1/04-6/30/07

Bridging the Gap Between Surface Science & High Surface Area Chemistry, NSF, (G. Maciel-PI, D. Grainger and B. Parkinson Co-PIs), NSF \$450k, 8/1/05-7/31/08

Building and Characterizing Dye Structures on Well-Ordered Anatase and Rutile Crystal Surfaces, \$405,008 2/1/03-1/31/06

Supplemental Equipment Grant from DOE to Purchase an AFM upgrade, 9/03, \$18,500

Fundamental Studies of Dye-Semiconductor Interfaces, DOE-BES, \$420,052 8/99 – 7/02

Studies in High Quantum Yield Sensitization, DOE-BES, \$355k, 4/1/96 -3/31/99

A Solid State Chemistry CD-ROM Dreyfus Foundation - with Peter Dorhout – \$32, 688 8/1/98-7/31/00

Student Support for Mark Nelson, Hewlett Packard, Ft. Collins, \$15,000 for 10 months

Morphology-Photoconductivity Relationships in Pthalocyanine Thin Films, Colorado Advanced Materials Institute (CAMI), 7/1/98-6/30/99, \$10,000

Synthesis and Tunneling Spectroscopy of Inorganic Fullerene Materials, NREL \$46,736 9/1/98 – 6/1/99, Sabbatical Salary Support

Nanostructure Fabrication with Copolymer masks for Optoelectronics (with D. Grainger and C. Menoni (PI)) \$10,000 CAMI 7/1/98 – 6/30-99

Research Gift, Advanced Energy, \$1,000, 1999

Acquisition of Departmental XPS Spectrometer, NSF, co-PI, \$380,000

Surface Analysis of Thin Films, ITN Energy, \$5000, 1999

AFM of Photoconductor Structures, Lexmark, \$2500, 1998

Observation of Individual Catalytic Hydrodesulfurization Reactions with a Variable Temperature Ultrahigh Vacuum Scanning Tunneling Microscope, AS-PRF \$59,562, 7/1/99- 6/30/02

A Novel Tandem Homojunction Solar Cell, DOE-AEP, \$850k, 7/1/95 -6/30/98. PI with H. Temkin and G. Maciel co-PIs.

Acquisition of Departmental X-Ray Instrumentation, NSF, Co PI, \$230k

Ultrafast Studies of Electrochemistry and Photoelectrochemistry, DOE-URI, \$299k, 1995 Equipment grant – Co-PI's N. Levinger, C. Schenck and C. M. Elliott

Electrochemical Control of Oxygen Stoichiometry in High  $T_c$  Superconductors and Related Systems, EPRI, 9/1/92 – 3/31/96, \$144k

Acquisition of Materials Characterization Instrumentation for a Central Materials Analysis Facility at CSU, NSF, \$337,758, co-PI, funded 1999

Research Gift to Help Support Visiting Scientist, \$10,000 Mitsubishi Paper Mills, Company, 1997

Polyhedral and Cylindrical Structures of Layered  $\text{MX}_2$  Type Compounds, US-Israel Binational Science Foundation with R. Tenne, \$38,500 (\$3,000 to US investigator), 1993-1996

STM of Dye sensitized Photocurrents, DOE-BES, \$310k, 1992-1995

Ultrahigh Vacuum Scanning Tunneling Microscope, \$226k, DOD Research Instrumentation, joint with H. Temkin

Scanning Probe Microscopy of Fullerene Based Solids, \$3,500, TDA Research, 1994

Purchase of Long Range AFM Scanner, \$7,000, Kodak, 1994

Growth and Patterning of van der Waals Epitaxial Layers, \$10,000, CAMI, 1993-1994

Support for Scanning Tunneling Microscopy Research, \$6,200, Symbios Logic

AFM of Adsorbed Proteins, \$5,000, Biostar, 1993

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PI or Co-PI on Grants totaling >\$10,400,000 in 16 years at CSU

### **RECENT INVITED TALKS**

Plenary lecture at 16<sup>th</sup> International Conference on Photochemical Conversion and Storage of Solar Energy, Uppsala, Sweden July, 2006

Electrochemistry Gordon Conference Invited Talk, January 2006

Department of Physics and Astronomy, University of Toledo, March 2007

Department of Chemical Engineering, Colorado School of Mines, September 2007

Department of Chemistry, University of Colorado, October 2007

Plenary Lecturer at the International Conference on Advanced Materials (ICAM), Kattayam, India, February 2008

Invited talk at the 17<sup>th</sup> International Conference on Photochemical Conversion and Storage of Solar Energy, Sydney, Australia, July 2008

## PUBLICATION LIST

1. Leo A. Paquette, Stanley A. Lang, Michael R. Short, Bruce Parkinson, and Jon Clardy, Tetrahedron Letters, 3141-3144 (1972), "Stereochemistry of the Stereoselective Epoxidation and Hydroboration of Hexamethyl (Dewar Benzene)."
2. Leo A. Paquette, Gary H. Birnberg, Jon Clardy, and Bruce Parkinson, J. Chem. Soc. Commun., 129-130 (1973), "Stereoselective, 1,4 Bromination of Semibullvalene and Tri-n-Butyltin Hydride of the Dibromide."
3. Dennis C. Johnson, Larry R. Taylor, and Bruce Parkinson, Electrochimica Acta, **20**, 1005 (1975), "Electrocatalysis of the Charge-Transfer Process for the Sb(III)/Sb(V) Couple at a Platinum Electrode in Concentrated HCl."
4. B. A. Parkinson and Fred C. Anson, J. Electroanal. Chem., **85**, 317 (1977), "Eu<sup>+2</sup> and V<sup>+2</sup> as Electrode Kinetic Probes of the Structure of the Diffuse Layer in Dilute Electrolytes."
5. B. A. Parkinson and Fred C. Anson, Anal. Chem., **50**, 1886 (1978), "Adsorption and Polymeric Film Formation at Mercury Electrodes by Solutions of Pb(II) and Chelating Ligands Containing a Thioether Group."
6. B. A. Parkinson, A. Heller, and B. Miller, Applied Physics Letters, **36**(6) (1978), "Enhanced Photoelectrochemical Solar Energy Conversion by Gallium Arsenide Surface Modification."
7. A. Heller, B. A. Parkinson, and B. Miller, Proc. 13th IEEE Photovoltaic Specialists Conf., 1978, p. 1253, "A Semiconductor Liquid Junction Solar Cell with 12% Solar Conversion Efficiency."
8. B. A. Parkinson, A. Heller, and B. Miller, J. Electrochem. Soc., **126**(6), 955 (1979), "Effect of Cations on the Performance of the Photoanode in the n-GaAs/K<sub>2</sub>Se-K<sub>2</sub>Se<sub>2</sub>-KOH/C Semiconductor Liquid Junction Solar Cell."
9. R. J. Nelson, J. S. Williams, H. J. Leamy, B. Miller, H. C. Casey, Jr., B. A. Parkinson, and A. Heller, Applied Physics Letters, **36**(1), 76 (1980), "Reduction of GaAs Surface Recombination Velocity by Chemical Treatment."
10. B. A. Parkinson, Franco Decker, J. F. Juliao, M. Abramovich, and Helio C. Chagas, Electrochimica Acta, **25**, 521 (1980), "The Reduction of Molecular Oxygen on Single Crystal Rutile Electrodes."
11. W. D. Johnston, Jr., H. J. Leamy, B. A. Parkinson, A. Heller, and B. Miller, J. Electrochem. Soc., **127**(1), 90 (1980), "Effect of Ruthenium Ions on Grain Boundaries in Gallium Arsenide Thin Film Photovoltaic Devices."
12. F. Decker and B. A. Parkinson, J. Electrochem. Soc., **127**(11), 2370 (1980), "Suppression of GaAs Photocorrosion by Water Soluble Organic Redox Couples."

13. T. Furtak, D. Canfield, and B. A. Parkinson, J. of Applied Physics, 51(11), 6018 (1980), "A. Scanning Laser Spot System of the *in situ* Evaluation of Topographic Carrier Collection in Liquid Junction Solar Cells."
14. B. A. Parkinson, Proceedings: Photovoltaics Advanced R&D Annual Review, SERI/DOE TP-311-428, October, 1979, p. 147, "State of the Art Photoelectrochemical Solar Cells."
15. B. A. Parkinson, T. E. Furtak, D. C. Canfield, K. Kam, and G. Kline, Discussions of the Faraday Society, Vol. 70, 233 (1980), "Evaluation and Reduction of Efficiency Losses at Tungsten Diselenide Photoanodes."
16. D. C. Canfield and B. A. Parkinson, J. Amer. Chem. Soc., 103, 1279 (1981), "Improvement of Energy Conversion Efficiency by Specific Chemical Treatments of n-MoSe<sub>2</sub> and n-WSe<sub>2</sub> Photoanodes."
17. G. Kline, K. Kam, D. Canfield, and B. A. Parkinson, Solar Energy Materials, 4, 301 (1981), "Efficient and Stable Photoelectrochemical Cells Constructed with WSe<sub>2</sub> and MoSe<sub>2</sub> Photoanodes."
18. Kent R. Mann and B. A. Parkinson, Inorg. Chem., 20, 1921 (1981), "The Redox Behavior of the [Rh<sub>2</sub>(1,3-dioscyanopropane)<sub>4</sub>]<sub>2</sub><sup>6+</sup> Ion at the Rotating Glassy Carbon Electrode."
19. K. Kam and B. A. Parkinson, J. Phys. Chem., 82, 463 (1982), "Detailed Photocurrent Spectroscopy of the Semiconducting Group VI Transition Metal Dichalcogenides."
20. C. Levy-Clement, A. Heller, W. A. Bonner and B. A. Parkinson, J. Electrochem. Soc., 129, 1701 (1982), "Spontaneous Photoelectrolysis of HBr and HI in Two Photoelectrode Semiconductor Liquid Junction Cells."
21. B. A. Parkinson, Solar Cells, 6, 177 (1982), "An Evaluation of Various Configurations for Photoelectrochemical Photovoltaic Solar Cells."
22. G. Kline, K. Kam, R. Ziegler and B. A. Parkinson, Solar Energy Materials, 6, 337 (1982), "Further Studies of the Photoelectrochemical Properties of the Group VI Transition Metal Dichalcogenides."
23. K. Kam, D. L. Rath and B. A. Parkinson, Electrochem. Soc. Proceedings, Vol, 82-3, P. 532, "Measurement of Electron and Hole Mobilities on Semiconductors with Layered Structure."
24. D. S. Ginley, R. M. Biefeld, K. Kam and B. A. Parkinson, J. Electrochem. Soc., 294, 145 (1982), "Polycrystalline WSe<sub>2</sub> Photoelectrodes."

25. D. S. Ginley, M. Chamberlain, R. J. Baughman, R. M. Biefeld, B. A. Parkinson and K. Kam, Electrochem. Soc. Proceedings, Vol. 82-3, p. 191, "Three Cases of Enhanced Electrode Stability through Surface Modification."
26. J. A. Turner and B. A. Parkinson, J. Electroanal. Chem., 150, 611 (1983), "The Application of Chronocoulometry to the Study of Adsorption at the Semiconductor/Electrolyte Interface."
27. B. A. Parkinson, J. Chem. Ed., 60, 338 (1983), "An Overview of the Progress in Photoelectrochemical Energy Conversion."
28. G. Cooper, J. A. Turner, B. A. Parkinson, and A. J. Nozik, J. Appl. Phys., 54 (11), 6463 (1983), "Hot Carrier Injection of Photogenerated Electrons and Holes at Indium Phosphide-Electrolyte Interfaces."
29. J. S. Stickney, S. R. Rosasco, T. Solomun, A. T. Hubbard, and B. A. Parkinson, Surface Science, 136, 15 (1984), "Demonstration of the Surface Stability of the van der Waals Surface (0001) of MoSe<sub>2</sub> by LEED and Electrochemistry."
30. L. Fornarini, A. J. Nozik, and B. A. Parkinson, J. Phys. Chem., 88, 3238 (1984), "The Energetics of p/n Photoelectrolysis Cells."
31. S. Prybyla, W. S. Struve, and B. A. Parkinson, J. Electrochem. Soc., 131 (7), 1587 (1984), "Transient Photocurrents in WSe<sub>2</sub> and MoSe<sub>2</sub> Photoanodes."
32. B. A. Parkinson, "On the Efficiency and Stability of Photoelectrochemical Devices", Accounts of Chemical Research, 17, 431 (1984)
33. B. A. Parkinson and P. A. Weaver, Nature, 309, 148 (1984), "Photoelectrochemical Pumping of Enzymatic CO<sub>2</sub> Reduction."
34. C. A. Koval, R. L. Austermann, J. A. Turner and B. A. Parkinson, "The Effects of Surface Energetics and Surface Oxide Layers on the Cyclic Voltammetry of Metallocenes at Nonilluminated p-InP Electrodes", J. Electrochem. Soc., 132, 613 (1985).
35. J. C. W. Folmer, J. Tuttle, J. A. Turner, and B. A. Parkinson, "Crystal Growth and Photoelectrochemical Characterization of CdSnP<sub>2</sub>", J. Electrochem. Soc., 132, 1608, (1985).
36. M. Bhushan, J. A. Turner, and B. A. Parkinson, "Photoelectrochemical Investigation of Zn<sub>3</sub>P<sub>2</sub>.", J. Electrochem. Soc., 133, 536 (1986)
37. J. C. W. Folmer, J. A. Turner, and B. A. Parkinson, "Palladium Chalcogenide and Pnictide Semiconductors and Their Photoelectrochemical Behavior.", J. Solid State Chem., 68, 28, (1987).



38. J. C. W. Folmer, J. A. Turner, and B. A. Parkinson, S. K. Deb, and D. Cahen, "II-IV-V<sub>2</sub> Chalcopyrite Type Photoelectrodes; The CdSnP<sub>2</sub>/Aqueous Polysulfide System" Prog. in Crystal Growth and Characterization, 10, 321 (1985).
39. J. C. W. Folmer, J. A. Turner, And B. A. Parkinson, "Amelioration of the Photoresponse of PdPS Photoanodes by Ferrocyanide Electrolytes", Inorganic Chem., 24, 4028 (1985).
40. M. A. Ryan, J. A. Turner, D. Williamson, M. W. Peterson, J. S. Frye, G. E. Maciel and B. A. Parkinson, "Metal Site Disorder in ZnSnP<sub>2</sub>", J. Materials Research, 2, 528, (1987)
41. M. A. Ryan and B. A. Parkinson, "Optical properties of ZnP<sub>2</sub> via Photoelectrochemistry.", Applied Physics Letters, 48(25), 1754 (1986)
42. M. T. Spitler and B. A. Parkinson, "Efficient Infrared Dye Sensitization of van der Waals Surfaces of Semiconductor Electrodes.", Langmuir, 2, 549, (1986)
43. Mark W. Peterson and B. A. Parkinson, "Photoelectrochemical Investigation of Several II-IV-V<sub>2</sub> Semiconducting Glasses.", J. Electrochem. Soc., 133(12), 2538, (1986)
44. Mark W. Peterson and B. A. Parkinson, "Photoelectrochemical Characterization of Three Rhodium Iodide Semiconductors.", J. Electrochem. Soc., 135(6), 1424, (1988)
45. B. A. Parkinson, "A Review of "Business Filevision" for the Macintosh", J. Amer. Chem. Soc., 109, 2230, (1987)
46. F. S. Ohuchi, W. Jaegermann and B. A. Parkinson, "XPS Investigation of the Reaction of SnS<sub>2</sub> (0001) with Copper", Surface Science, 194, L69, (1988)
47. D. O'Hare, W. Jaegermann, F. S. Ohuchi, D. Williamson and B. A. Parkinson "XPS, Mössbauer, Magnetic and Electrical Conductivity Study of SnS<sub>2</sub>.(Cobaltacene)<sub>0.29</sub>" Inorg Chem, 27, 1537, (1988)
48. W. Jaegermann, F. S. Ohuchi and B. A. Parkinson, "Interaction of Cu, Ag and Au with the van der Waals Surfaces of Semiconducting Metal Dichalcogenides", Surface Science, 201, 211, (1988)
49. W. Jagermann, F. S. Ohuchi and B. A. Parkinson, "Electrointercalation of Cu into SnS<sub>2</sub>", Ber. Busenenges. Phys Chem., 93, 29, (1989)
50. W. Jagermann, F. S. Ohuchi and B. A. Parkinson, "The Interaction of Group IB Metals with van der Waals Faces of Semiconducting Metal Dichalcogenides", Surface and Interface Analysis, 12, 293, (1988)
51. B. A. Parkinson, "Dye Sensitization of the van der Waals Surface of SnS<sub>2</sub>", Langmuir, 4, 967, (1988)

52. D. Bruce Chase and B. A. Parkinson, "Infrared Surface-Enhanced Raman Spectroscopy", J. Applied Spectroscopy, 42, 1186, (1988)
53. P. A. G. O'Hare, Brett M. Lewis and B. A. Parkinson, "Standard Molar Enthalpy of Formation by Fluorine Combustion Calorimetry of Tungsten Diselenide (WSe<sub>2</sub>)", J. Chemical Thermodynamics, 20, 681, (1988)
54. B. A. Parkinson, "Sensitization of van der Waals Surfaces of SnS<sub>2</sub> by Soluble Phthalocyanines", Electrochemical Society Proceedings, 88-14, 160, (1988)
55. D. L. Doering, F. S. Ohuchi, W. Jaegermann and B. A. Parkinson, "Epitaxial Growth of Copper, Silver and Gold on a Semiconducting Layered Material: Tungsten Disulfide", Materials Research Society Proceedings, 102, 41, (1988)
56. F. S. Ohuchi, W. Jaegermann, C. Pettenkofer and B. A. Parkinson, "Semiconductor to Metal Transition of WS<sub>2</sub> Induced by Potassium Intercalation in Ultrahigh Vacuum", Langmuir, 5, 439, (1989)
57. C. Koval, J. Olson and B. A. Parkinson, "Ideally Polarizable Semiconductor-Solution Interfaces", ACS Advances Symposium Series, 378, 438, (1988)
58. S. L. Tang, R. V. Kasowski and B. A. Parkinson, "Scanning Tunneling Microscopy of the Subsurface Structure of WTe<sub>2</sub> and MoTe<sub>2</sub>", Phys. Rev. B, 39(14), 9987, (1989)
59. W. Jaegermann, C. Pettenkofer and B. A. Parkinson, "Ag on p-WSe<sub>2</sub> (0001) Surfaces: Approaching the Schottky Limit?", Vacuum, 41, 4, (1990)
60. B. A. Parkinson, "Discrimination of Atoms on the Surface of a Two Dimensional Solid Solution with Scanning Tunneling Microscopy", J. Amer. Chem. Soc., 112, 1030, (1990)
61. D. Bruce Chase and B. A. Parkinson, "A Study of the Wavelength and Potential Dependence of Surface-Enhanced Raman Scattering on Cu, Ag and Au Electrodes", J. Phys. Chem., 95, 7810, (1991)
62. B. A. Parkinson, "Nanoscale Surface Modification Techniques Using the Scanning Tunneling Microscope", ACS Symposium Series, #499, 76, (1992)
63. L. Margulis, D. Mahalu, B. A. Parkinson and R. Tenne, "Photoactive 'Mixed' Surfaces on Layered Semiconductors", Scanning Microscopy, 5(4), 993, (1991)
64. F. Willig, R. Eichberger, N. S. Sundaresan and B. A. Parkinson, "Experimental Time Scale of Gerischer's Distribution Curves for Electron-Transfer Reactions at Semiconductor Electrodes", J. Amer. Chem. Soc., 112, 2702, (1990)

65. M. L. Bortz, F.S. Ohuchi and B. A. Parkinson, "An Investigation of the Growth of Au and Cu on the van der Waals Surfaces of MoTe<sub>2</sub> and WTe<sub>2</sub>", Surface Science, 223, 285, (1989)
66. W. Jaegermann, C. Pettenkofer and B. A. Parkinson, "Cu and Ag Deposition on Layered p-WSe<sub>2</sub> : Approaching the Schottky Limit?", Phys. Rev. B, 42, 7487, (1990)
67. B. A. Parkinson, "Layer by Layer Nanometer Scale Etching of Two Dimensional Substrates Using the STM", J. Amer. Chem. Soc., 112(21), 7498, (1990)
68. F. S. Ohuchi, B. A. Parkinson, K. Ueno and A. Koma, "Van der Waals Epitaxial Growth and Characterization of MoSe<sub>2</sub> Thin Films on SnS<sub>2</sub>", J. Appl. Physics, 68(5), 2168, (1990)
69. S. L. Tang, R. V. Kasowski, A. Suna and B. A. Parkinson, "Surface Valence Charge Distributions and Scanning Tunneling Microscopy of WTe<sub>2</sub>", Surface Science, 238, 280, (1991)
70. M. Whangbo, J. Ren and B. A. Parkinson, "Relationship of the STM Image to the Local Density of States in ReSe<sub>2</sub>", J. Amer. Chem. Soc., 113, 7833, (1991)
71. K.Ueno, A.Koma, F. S. Ohuchi and B. A. Parkinson, "Periodic Lattice Distortions as a Result of Mismatch in Epitaxial Films of 2-D Materials", Appl. Phys. Letters, 58, 472, (1991)
72. K.Ueno, A.Koma, F. S. Ohuchi and B. A. Parkinson, "Etching and Characterization of van der Waals Epitaxial Layers with the STM", State of the Art Proceedings on Compound Semiconductors (12th International Symposium), Electrochemical Society Publication PV 90-15, D. C. D'Avanzo, R. E. Enstrom, A. T. Macrander and D. DeCoster, Editors
73. J. M. Lanzafame, L. Min, R. J. D. Miller, A. Muentner and B. A. Parkinson, "Electron Injection from Adsorbed Oxazine into SnS<sub>2</sub>", Molecular Crystals and Liquid Crystals, 194, 287, (1991)
74. F. S. Ohuchi, T. Shimada, K.Ueno, B. A. Parkinson, and A.Koma, "Growth of MoSe<sub>2</sub> Thin Films with van der Waals Epitaxy", J. Crystal Growth, 111:1-4, 1033, (1991)
75. Mark A. Harmer, C. R. Fincher and B. A. Parkinson, "Scanning Tunneling Microscopy of the Surface Topography and Surface Etching of Nanoscale Structures on the High-Temperature Superconductors" J. Applied Phys. 70(5), 2760, (1991)
76. Ed Delawski and B. A. Parkinson, "Layer by Layer Etching of Metal Dichalcogenides with the Atomic Force Microscope", J. Amer. Chem. Soc., 114, 1661, (1992)

77. C. Pettenkofer, W. Jaegermann, and B. A. Parkinson, "Copper Intercalation into 1T-TaS<sub>2</sub>", Surface Science, 251, 583, (1991)
78. Toshihiro Shimada, Fumio S. Ohuchi, and B. A. Parkinson, "Thermal Decomposition of SnS<sub>2</sub> and SnSe<sub>2</sub>: Novel Molecular Beam Epitaxy Sources for Sulfur and Selenium", Journal of Vacuum Sci. and Tech. A., 10(3), 539, (1992)
79. Mark A. Harmer, Curtis R. Fincher and B. A. Parkinson, "Surface Morphology of High Temperature Superconductor Thin Films using Scanning Tunneling Microscopy", J. of Materials Science, 27(18), 4871, (1992)
80. D. R. Lawson, D. L. Feldheim, C. A. Foss, P. K. Dorhout, C. M. Elliott, C. R. Martin and B. A. Parkinson, "Near IR Absorption Spectra for the Buckminsterfullerene Anions: An Experimental and Theoretical Study", J. Electrochem. Soc., 139, L68, (1992)
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82. G. E. Collins, K. W. Nebesny, C. D. England, L.-K. Chau, P. A. Lee, B. A. Parkinson and N. R. Armstrong, "Orientation and Structure of Monolayer to Multilayer Phthalocyanine Thin Films on Layered Semiconductor (MoS<sub>2</sub> and SnS<sub>2</sub>) Surfaces", J. Vac. Sci. Technol. A, 10:4, 2902, (1992)
83. B. A. Parkinson and M. T. Spitler, "Recent Advances in High Quantum Yield Dye Sensitization of Semiconductor Electrodes", Electrochimica Acta, 37(5), 943, (1992)
84. L-K. Chau, C. Arbour, G. E. Collins, K. W. Nebesny, P. A. Lee, N. R. Armstrong, and B. A. Parkinson, "Pthalocyanine Aggregates on Metal Dichalcogenide Surfaces: Dye Sensitization on SnS<sub>2</sub> Semiconductor Electrodes by Ordered and Disordered InPc-Cl Thin Films", J. Phys. Chem, 97, 2690, (1993)
85. N. R. Armstrong, K. W. Nebesny, G. E. Collins, P. A. Lee, L. K. Chau, C. Arbour and B. A. Parkinson, "O/I-MBE - - Formation of Highly Ordered Phthalocyanine/Semiconductor Junctions by Molecular Beam Epitaxy: Photoelectrochemical Characterization", Proceedings -- SPIE Symposium #1559 -- July 1991 Photopolymer Device Physics and Applications
86. N. R. Armstrong, K. W. Nebesny, G. E. Collins, P. A. Lee, L. K. Chau, C. England, D. Diehl, M. Douskey and B. A. Parkinson, "Dye Aggregates and Organic Supperlattices Formed by Organic/Inorganic Molecular Beam Epitaxy " Thin Solid Films, 216, 90, (1992)
87. J. M. Lanzafame, R. J. D. Miller, A. A. Muentner and B. A. Parkinson, "Ultrafast Charge Transfer Dynamics at SnS<sub>2</sub> Surfaces", J. Phys. Chem., 96, 2820, (1992)

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