

Brian G. Frederick

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Professional Preparation

Juniata College	Physical Chemistry	B.S.	1984
Cornell University	Physical Chemistry	M.S.	1987
Cornell University	Physical Chemistry	Ph.D.	1991
University of Liverpool	Surface Science	Post-doc	1991-1998

Appointments

1. Assoc. Professor of Chemistry, University of Maine, 2003-present
2. President, Stillwater Scientific Instruments, 2002-2006
3. Asst. Professor of Chemistry, University of Maine, 1998-2003

Publications

1. A.G. Shirke, R. E. Cavicchi, S. Semancik, R. H. Jackson, B. G. Frederick, M. C. Wheeler, "Femtomolar isothermal desorption using microhotplate sensors", *JVST-A*, 25 (2007), 514-526.
2. S. Ma and B.G. Frederick, *Reactions of aliphatic Alcohols on WO₃(001) Surfaces*, *J. Phys. Chem. B* 107 (2003) 11960-11969.
3. S. Ma, F. G. Amar, B. G. Frederick, *Surface heterogeneity and diffusion in the desorption of methanol from WO₃(100) surfaces*, *J. Phys. Chem. A* 107 (2003) 1413-1423.
4. L.J. LeGore, R. J. Lad, J. F. Vetelino, B. G. Frederick, "Defects and Morphology of Tungsten Trioxide Thin Films" *Thin Solid Films* 406 (2002) 79-86.
5. B. G. Frederick, T. Hildebrandt, C. C. Perry, Q. Chen, A. W. Munz, Th. Bertrams, V. Zielasek, N. V. Richardson and M. Henzler, "Inelastic Diffraction in Coadsorbed Periodic Structures", *Surf. Sci.* 418 (1998) 407-419.
6. B. G. Frederick, R. J. Cole, J. R. Power, C. C. Perry, Q. Chen, N. V. Richardson, P. Weightman, C. Verdozzi, D. R. Jennison, P. A. Schultz, and M. P. Sears, "Molecular orientation with visible light: reflection anisotropy spectroscopy of 3-thiophene carboxylate on Cu(110) surfaces" *Phys. Rev. B* 58 (1998) 10883-10889.
7. B. G. Frederick, J. R. Power, R. J. Cole, C. C. Perry, Q. Chen, S. Haq, Th. Bertrams, N. V. Richardson and P. Weightman, "Adsorbate azimuthal orientation from reflectance anisotropy" *Phys. Rev. Lett.* 80 (1998) 4490-4493.
8. Q. Chen, B. G. Frederick, and N. V. Richardson, "An HREELS Study of π^* and σ^* Negative Ion Resonances of c(8x2) Benzoate on Cu(110)" *J. Chem. Phys.* 108 (1998) 5942-5947.
9. B. G. Frederick, Q. Chen, F. M. Leibsle, M. B. Lee, K. J. Kitching and N. V. Richardson, "Long range periodicity in c(8x2) benzoate/Cu(110) surface: A combined STM, LEED and HREELS Study," *Surf. Sci.*, 394 (1997) 1-25
10. B. G. Frederick, G. Apai and T. N. Rhodin, *An XPS study of rhodium carbonyls adsorbed on planar aluminas: formation of geminal dicarbonyl species*, *J. Am. Chem. Soc.* 109 (1987) 4797-4804.

Synergistic Activities

- Founder and President of Stillwater Scientific Instruments, a spin-out of UMaine research now commercializing high performance Time-of-Flight Mass Spectrometers with leading Mass Spec OEM's
- Chair, 11th International Conference on Vibrations at Surfaces, Bar Harbor, ME, June 6-10, 2004.
- Advisor of 8 Ph.D. students, 3 M.S students, 5 Post-doctoral students, 3 Undergraduate students, 2 High School students (one was a National finalist in the Junior Science and Humanities Symposium)
- Curriculum development using POGIL method to teach graduate quantum chemistry and spectroscopy

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Potential Conflicts of Interest or Bias in Selection of Reviewers)

Collaborators

Dr. François G. Amar, University of Maine, Chemistry
Dr. Richard Cavicchi, National Institute of Standards and Technology
Dr. Linda K. DeNoyer, Spectrum Square Associates
Dr. William DeSisto, University of Maine, Chemical and Biological Engineering
Dr. Peter H. Kleban, University of Maine, Physics
Dr. Robert J. Lad, University of Maine, Physics
Dr. Stephen A. Lammert, Stillwater Scientific Instruments
Dr. Hemant Pendse, University of Maine, Chemical and Biological Engineering
Dr. Steve Semancik, National Institute of Standards and Technology
Dr. Adriaan van Heiningen, University of Maine, Chemical and Biological Engineering
Dr. M. Clayton Wheeler, University of Maine, Chemical and Biological Engineering

Graduate Advisor: Professor Thor N. Rhodin, Dept. Appl. & Eng. Physics, Cornell University

Postdoctoral Advisor: Professor Neville V. Richardson, School of Chemistry, University of St. Andrews

Graduate Advisees:

Ruth C. Bainbridge; Myong-Bok Lee, (Seoul, Korea); Chen Qiao (University of Sussex); Christopher Perry (Loma Linda University); L. Jay LeGore; Robert H. Jackson (Stillwater Scientific Instruments); Shuguo Ma (University of South Carolina); Zhongyu Yang (Stillwater Scientific Instruments); Andrea Martin; Meng Lu; Aziz El Madi. Current: Rachel A. Pollock. Timothy Thibodeau.