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Soft Biological & Composite Nanomaterials - Thrust Leader

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Education

Ph.D. Cornell University, 1991; Physical Chemistry (Theoretical Chemistry minor).

Advisor: Professor A.C. Albrecht

M.S. Cornell University, 1986; Physical Chemistry.

B.S. West Virginia Wesleyan College, 1983; Chemistry major, Mathematics minor.

Appointments

1994 to present: Technical Staff Member, Materials Physics and Applications Division (2005-present); Bioscience Division (1999-2005); Chemical Science and Technology Division (1997-1999); J. Robert Oppenheimer Fellow, Chemical Science and Technology Division (1994-1997), Los Alamos National Laboratory.

1991 to 1994: National Institutes of Health Postdoctoral Fellow, Professor Richard A. Mathies, Department of Chemistry, University of California, Berkeley.

Publications

1. *Thermochromism of a poly(phenylene vinylene): Untangling the roles of polymer aggregate and chain conformation.* C.C. Wang, Y. Gao, A.P. Shreve, C. Zhong, L. Wang, K. Mudalige, H.-L. Wang, M. Cotlet. *J. Phys. Chem. B* 113 (2009) 16110-16117.
2. *Aggregation effects on the emission spectra and dynamics of model oligomers of MEH-PPV.* G.A. Sherwood, R. Cheng, T.M. Smith, J.H. Werner, A.P. Shreve, L.A. Peteanu, J. Wildeman, *J. Phys. Chem. C* 113 (2009) 18851-18862.
3. *Formation and dynamics of supported phospholipid membranes on a periodic nanotextured substrate.* J.H. Werner, G.A. Montaño, A.L. Garcia, N.A. Zurek, E.A. Akhadov, G.P. Lopez, A.P. Shreve. *Langmuir* 25 (2009) 2986-2993.
4. *Impact of physicochemical properties of engineered fullerenes on key biological responses.* R. Martin, H.-L. Wang, S. Iyer, G.A. Montaño, J.S. Martinez, A.P. Shreve, Y. Bao, C.-C. Wang, Z. Chang, Y. Gao, J. Gao, R. Iyer. *Toxicology and Appl. Pharmacology* 234 (2009) 58-67.
5. *Ultrafast spectroscopy of the Uranium(IV) and Thorium(IV) bis(ketimide) complexes (C5Me5)2An[$N=C(Ph)(CH_2Ph)$]₂ (An=Th, U).* D.J. Hilton, R.P. Prasankumar, E.J. Schelter, V.K. Thorsmølle, S.A. Trugman, A.P. Shreve, J.L. Kiplinger, D.E. Morris, and A.J. Taylor. *J. Phys. Chem. A* 112 (2008) 7840-7847.
6. *Observation of three intervalence-transfer bands for a class II-III mixed-valence complex of ruthenium.* R.C. Rocha, F.N. Rein, H. Jude, A.P. Shreve, J.J. Concepcion, and T.J. Meyer. *Angew. Chem. Intl. Ed.*, 47 (2008) 503-506.
7. *Evidence for leaflet-dependent redistribution of charged molecules in fluid supported phospholipid bilayers.* M.C. Howland, A.R. Sapuri-Butti, T.W. Allen, A.P. Shreve, and A.N. Parikh. *Langmuir* 24 (2008) 13250-13253.
8. *Metabolic photo-fragmentation kinetics for a protocell.* C. Knutson, G. Benkö, T. Rocheleau, F. Mouffouk, J. Maselko, L. Chen, A.P. Shreve, and S. Rasmussen. *Artificial Life*, 14 (2008) 189-201.
9. *Optical detection of ion-channel induced proton transport in supported phospholipid bilayers.* T.-H. Yang, C.K. Yee, M.L. Amweg, S. Singh, E.L. Kendall, A.M. Dattelbaum, A.P. Shreve, C.J. Brinker, and A.N. Parikh. *Nano Letters*, 7 (2007) 2446-2451.

10. *Determination of exciton-phonon coupling elements in single-walled carbon nanotubes by Raman overtone analysis.* A.P. Shreve, E.H. Haroz, S.M. Bachilo, R.B. Weisman, S. Tretiak, S. Kilina, and S.K. Doorn. *Phys. Rev. Lett.* 98 (2007) 037405.

Collaborators: C.J. Brinker (Sandia National Laboratory, U. New Mexico); J.A. Brozik (Washington State Univ.); M. Cotlet (Brookhaven); R.B. Dyer (Emory Univ.); D.G. Evans (U. New Mexico); G.P. Lopez (Duke Univ.); T.J. Meyer (U. North Carolina); A.N. Parikh (UC Davis); L. Peteanu (Carnegie Mellon Univ.); D.Y. Sasaki (Sandia National Laboratories).

Graduate and Postdoctoral Advisors: A.C. Albrecht (deceased, Cornell University); R.A. Mathies (UC Berkeley).

Thesis Advisor and Postgraduate – Scholar Sponsor: Robert Provencal; Dean Duncan; Wayne Buschmann; Andrew Dattelbaum; Reginaldo Rocha; Gabriel Montaña; Mac Brown; Donny Magana; Michael Neidig.

Synergistic Activities

Awards: Dow Fellowship (Cornell); Procter and Gamble Fellowship (Cornell); National Science Foundation Graduate Fellowship (Cornell); National Institutes of Health Postdoctoral Fellowship (UC Berkeley); J. Robert Oppenheimer Fellowship (Los Alamos); Laboratory Fellows Prize for Scientific Leadership (Los Alamos).

Affiliations: Biophysical Society, American Chemical Society, American Physical Society, Materials Research Society, Society for Applied Spectroscopy, American Association for the Advancement of Science

Professional activities: Co-organizer of symposia, "Spatially Resolved Characterization of Local Phenomena in Materials and Devices" for 2002 MRS fall meeting, "Developing Nano-bio Interfaces" for 2005 MRS spring meeting; Scientific thrust leader (2001-present), interim chief scientist (2002-2003) and acting co-director (2008-2009) for the Center for Integrated Nanotechnologies (CINT); Member of Executive Committee, Center for Nonlinear Studies, 1999-present, Los Alamos National Laboratory; Member External Advisory Committee, NSF Nano-Bio Interfaces Center, University of Pennsylvania, 2008-present; *Ad-hoc* member NIH BBCA study section, February, 2001; Member NIH special study sections, June 2000, October 2000, July 2003, July 2004, February 2007; Member of LANL Directed Research Strategy Team, Laboratory Directed Research and Development program, 2000-2002; Chair of LANL Directed Research Science Advisory Panel for Materials Science (2009).

Research Interests and Experience : Applications of spectroscopic techniques to the study of electron and energy transfer processes in biology, chemistry and nanoscale materials science; Theory of electron and energy transfer; Experimental and theoretical development of time-resolved and nonlinear spectroscopies, optical imaging methods, surface-specific spectroscopies, and Raman spectroscopies; Thin-film nanostructured self-assembled materials and biomimetic membrane architectures; Biosensor technology; Spectroscopic studies of protein structure and dynamics.