Advanced Materials Laboratory
Sandia National Laboratories
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John A. Shelnutt

Current Position

1979 - Present **Sandia National Laboratories** **Albuquerque, NM**
Distinguished Member of Technical Staff
Advanced Materials Laboratory

Professional Experience

2002 - Present **University of Georgia** **Athens, GA**
Adjunct Professor
- **Department of Chemistry**

1989 - 2002 **University of New Mexico** **Albuquerque, NM**
Distinguished National Laboratory Professor of Chemistry
- **Department of Chemistry**

1976 - 1979 **Georgia Institute of Technology** **Atlanta, GA**
Research Assistant Professor
- **School of Physics**

1977 - 1979 **AT&T Bell Laboratories** **Murray Hill, NJ**
Consultant
Biophysical studies of heme proteins using a dual-channel Raman spectrometer co-developed with Denis Rousseau.

1968 - 1970 **Naval Weapons Center** **China Lake, CA**
Systems Analyst
Systems Analysis Division (Fuze Dept.): Missile and airplane simulations.

Education

1971 - 1975 **Georgia Institute of Technology** **Atlanta, GA**
- **Doctor of Philosophy in the School of Physics**
- **MS in Physics - 1971**
- **BS in Physics - 1968**

Teaching Experience

1989 - 2002

Graduate-Level Chemistry Courses Taught:
- **Electronic Structure Theory - Chem 501**
- **Fundamentals of Vibronic Spectroscopy - Chem 566**
- **Molecular Simulations - Chem 567**
- **Nanomaterials - Ch&NE 575 (with others)**
- **Nanotechnology - Ch&NE 515 (with others)**

Directed research for more than twelve graduate students with four PhDs granted.

Research Interests

- **Porphyrin-based nanostructures and other nanomaterials.**
- **Photocatalytic growth of metal and semiconductor nanostructures and nanostructured materials.**
- **Molecular mechanics and quantum chemical theoretical methods applied to designing molecular optical switches, catalysts, photomediators, chemical sensors, and nano-structured materials.**
- **Fundamental studies of tetrapyrrole-containing proteins using computational and experimental methods, in particular, molecular mechanics, Normal-Coordinate Structural Decomposition (NSD), and resonance Raman spectroscopy.**
- **Experimental and theoretical studies of basic photo-physical processes in biomolecular systems and their biomimes.**
- **Theory of vibronic molecular states and resonance Raman scattering.**

Awards received

- **2009 R&D 100 Award for NanoCoral Dendritic Platinum Nanostructures for Renewable Energy Applications**
- **2009 Federal Laboratory Consortium Award for Technology Transfer**
- **2008 Sandia Outstanding Wise Leadership Award**
- **6 Sandia National Laboratories Awards for Excellence (1992, 1993, 1994[2], 1995, 1999)**
- **Employee Recognition Award (1995)**
- **10 Sandia 'SPOT' Awards**

Service

- **Editorial Board Member of *Nanotechnology* (IOP, London), 2005 - Present**

Research Funding

Current funding:

- **Principal Investigator-SNL/LDRD: *Responsive composites*, 2009-2012, FY09 funding-$150K.**
- **Principal Investigator-SNL/LDRD: *CO_2 Reduction Using Photocatalytic Nanodevices*, 2006-2009, FY09 funding-$450K.**
- **Co-Principal Investigator-SNL/LDRD: *Hierarchical Electrode Architectures for Electrical Energy Storage and Conversion*, 2008-2012, FY09 funding-$180K.**
- **Co-principal Investigator-DOE/BES: *Molecular Nanocomposites*, FY05 funding-$80K.**
- **Co-Principal Investigator-SNL/LDRD: *Improving Electronic Structure Calculations to Predict Nano-optoelectronics and Nanocatalyst Function*, 2006-2009, FY09 funding-$80K.**

Professional memberships

- **American Chemical Society**
- **American Physical Society**
- **Biophysical Society**
- **Sigma χi**
- **American Association for the Advancement of Science**
- **Society of Porphyrins and Phthalocyanines**

Patents and publications

- **Over 190 refereed publications (see attached list)**
- **7 patents and 10 patent applications filed (see attached list)**

Security clearance

Q (W)

References

Prof. Kevin M. Smith
Vice Chancellor for Research
Department of Chemistry
University of California
Davis, CA 95616

Dr. William A. Hammetter
Manager
MS1349
Sandia National Laboratories
Albuquerque, NM 87185

Dr. Alan Hurd
Director
LANSCE
Los Alamos National Laboratory
Los Alamos, NM 87545

Prof. W. Robert Scheidt
Department of Chemistry
Notre Dame University
South Bend, IN 46556

Prof. Reinhard Schweitzer-Stenner
University of Puerto Rico
Department of Chemistry
PO Box 23300
San Juan, PR 00931-3300

Prof. Denis Rousseau
Albert Einstein College of Medicine of Yeshiva Univ.
Department of Physiology & Biophysics
1300 Morris Park Ave
Bronx, NY 10461

Prof. Craig J. Medforth
University of New Mexico
Department of Chemistry
Albuquerque, NM 87131

Prof. Karl Kadish
University of Houston
Department of Chemistry
Houston, TX 77004