

## **BRUCE C. BUNKER**

Soft Biological & Composite Nanomaterials - Partner Science Leader

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### **Education**

B.A. in Chemistry                      Occidental College                      1974

Ph.D. in Inorganic Chemistry      University of Illinois, Champaign-Urbana      1979

### **Publications**

1. *Reversible Switching of Interfacial Interactions*. B. C. Bunker, *Mat. Sci. Eng. R*, **62**, 158 (2008)(invited)
2. *Assembly of Polar-Oriented Synthetic Microtubule Organizing Centers*. E. D. Spoeke, G. D. Bachand, J. Liu, D. Y. Sasaki, and B. C. Bunker, *Langmuir*, **24**, 7039 (2008)
3. *Viscous "Interphase" Water Adjacent to Oligo(ethylene glycol) Terminated Monolayers*. H. I. Kim, J. G. Kushmerick, J. E. Houston, and B. C. Bunker. *Langmuir*, **19**, 9271 (2003)
4. *Programmed Adsorption and Release of Proteins in a Microfluidics Device*. D. L. Huber, et al. *Science*, **301**, 352 (2003)
5. *Ceramic Thin Film Formation on Functionalized Interfaces Using Biomimetic Processing*. B. C. Bunker, et al. *Science*, **264**, 48 (1994)
6. *The Fracturing of Glass*. S T. A. Michalske and B. C. Bunker. *Scientific American*, **255**, 122 (1987)

### **Synergistic Activities**

Experience: Bruce Bunker worked at Sandia National Laboratories from 1980 to 1991 as a research scientist (in Glass and Ceramic divisions) and as the supervisor of the Electronic Ceramics Division. He joined Pacific Northwest National Laboratory in 1991 as a Level V scientist in the Materials Division. At PNNL, he served for two years as Associate Director of the Interfacial and Processing Sciences Directorate of the Environmental and Molecular Sciences Laboratory. He rejoined Sandia in August, 1999. Dr. Bunker's early research involved the solution synthesis of ceramics (precipitation, sol-gel, and biomimetic routes), the degradation of oxides in aqueous environments (corrosion and stress corrosion cracking), and the chemical application of oxide surfaces in separations and catalysis. He is currently the Partner Scientific Leader in the Soft, Biological, and Composite Nanomaterials Thrust in the Center for Integrated Nanotechnologies and a staff member of the Electronic and Nanostructured Materials group at Sandia. Ongoing research involves developing switchable, active coatings (self-assembled monolayers, molecular machines, tethered polymers, and proteins) for microfluidic systems, integration of active proteins such as microtubules and motor proteins into fluidic systems for the active transport, assembly, and reconfiguration of nanomaterials, and the development of solution-derived nanomaterials for energy storage, CO<sub>2</sub> sequestration, and water treatment technologies.

### Honors:

DOE/BES Award for Outstanding Scientific Accomplishment (crack growth in silica)

R&D-100 Award (corrosion-resistant glass for lithium batteries)

SNL Award for Excellence (sol-gel ferroelectric memories program)

PNNL Outstanding Team Performance Award (colloid chemistry of nuclear waste)

Fellow of the American Ceramic Society (glass dissolution mechanisms)