

**Institute for Advanced Materials, Nanoscience and Technology**  
**Distinguished Speaker Seminar**  
**2:00 pm, Wednesday, April 2, 2008, Chapman 125**

**Grand Scientific Challenges in Energy**

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Never has the world been so acutely aware of the inextricably linked issues of energy, environment, economy, and security. Worldwide demand for energy is expected to increase by 50% or more by 2030, with over 70% of the growth coming from countries with emerging economies. These increasing demands have also placed enormous pressure on the environment as atmospheric levels of carbon dioxide continue to increase. To meet future energy demands for readily available, clean, and affordable energy, advances in technologies for future energy production, storage and utilization are critically needed. The enormous gaps between our present energy technologies and those required in the future will not be met with simple incremental improvements. Bridging this gap will require fundamental research to develop revolutionary new materials and associated chemical and physical processes. Developing these new technologies represents a grand scientific challenge that cuts across many scientific disciplines and will be enabled by emerging capabilities in synthesis, characterization and computation.

Michelle Buchanan is the Associate Laboratory Director for Physical Sciences at Oak Ridge National Laboratory. She received a B.S. in Chemistry from the University of Kansas and a Ph.D. in Chemistry from the University of Wisconsin-Madison. Previously she served as Director of the Chemical Sciences Division and as Associate Director of the Life Sciences Division. Her research has centered on mass spectrometry and she has over 150 scientific publications and reports, holds two patents, and was editor of a book on Fourier transform mass spectrometry. She has held several offices within the Division of Analytical Chemistry of the American Chemical Society and the American Society for Mass Spectrometry. She was North American Editor of *Biological Mass Spectrometry* and has served on the editorial boards of journals in the area of analytical chemistry and on numerous scientific advisory boards.

