



Distinguished Lecture Series

Dr. Robert R. Birge

Harold S. Schwenk Sr. Distinguished
Professor, University of Connecticut



Thursday, April 14, 2005

1:00 pm—2:00 pm

*Spencer Engineering Building
Room 1059*

All are welcome to attend.

Protein-Based Three-Dimensional Memories and Associative Processors

Molecular electronics offers a powerful and cost-effective path towards computer miniaturization and the generation of neural and three-dimensional architectures. Bioelectronics explores the use of native and genetically modified biomolecules and offers advantages because nature has generated unique materials with optimized properties through evolution and natural selection.

This presentation will explore the use of the proteins bacteriorhodopsin and proteorhodopsin in optical three-dimensional memories and parallel associative processors.

Three-dimensional memories store information in a memory volume element, and provide as much as a thousand-fold improvement in memory storage capacity over current technology. The associative memory operates in a fashion somewhat analogous to the human brain and responds to input data by finding (in a few nanoseconds) the closest match within the data base and feeding this information, and any associated information, to the output. Such a memory is critical to the development of artificial intelligence. The use of site directed mutagenesis and directed evolution to improve the properties of the protein for device applications will also be discussed.



Event generously sponsored by: Materials and Manufacturing Ontario

