



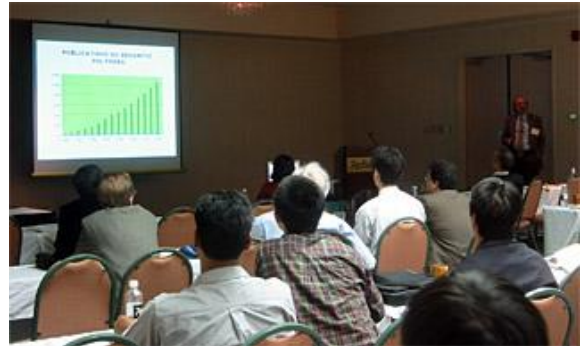
## JSPS – UNT Joint Symposium on Nanoscale Materials for Optoelectronics and Biotechnology

University of North Texas, Denton, Texas

February 2-3, 2006



ナノスケール物質研究とその広い分野への応用の重要性が近年指摘されているところです。特にナノスケールの技術を光エレクトロニクスおよび生物工学に適用することによって新しい分野を開拓することが大きな課題として浮上しています。今回のUNTとの共催シンポジウムではこの課題に焦点をあてました。若手研究者を中心として約70名が参加しました。組織委員長をはじめ組織委員には複数のJSPSフェロー米国同窓会メンバーが参加しており、同窓会メンバーのイニシアチブで熱心に討論が行われました。このシンポジウムを契機として、同窓会メンバーが中心となって境界領域を開拓するための共同研究がスタートするなど、大きな成果をあげました。



As scientists and engineers exploit the tools of nanotechnology to design closer to the molecular level, nanoscale materials engineering will have an increasingly important impact on a number of sectors, including biotechnology, electronics, energy, and industrial products. The Joint Symposium on Nanoscale Materials for Optoelectronics and Biotechnology organized jointly by the Japan Society for the Promotion of Science (JSPS) and the University of North Texas (UNT) brought renowned international researchers and immerse junior academic faculty, postdocs, and graduate students in a rich learning environment. This symposium aimed to capture the excitement of research on the rapidly growing number of optical and electronic phenomena in newly structured and disordered materials fashioned from sub-wavelength elements. The rapid advance of materials science makes it possible to design materials with tailored optical characteristics that will provide the basis for emerging photonic technologies. The format of the symposium was a "school" that provides both fundamental learning and promotes scientific discussions leading to discoveries.

### Topics:

Topics to be considered include:

- Micro & Nano Optics, Photonic Devices, Imaging & Sensing
- Materials for Optoelectronics and Biotechnology
- Optical Communications, Semiconductor Optoelectronic Devices
- Organics for Photonics and Integrated Optics
- Non-linear Optics and Ultrafast Phenomena
- Bio-photonics and bio-electronics in Molecular imaging and drug discovery
- Fluorescence Spectroscopy and Imaging for Biotechnology, Tissue Optics
- Photonic meta materials, plasmonics, and nanoscale semiconductor and electronic materials

This symposium had 7 sessions each day including 6 oral sessions and 1-poster session. The contributed papers include the research activities of young as well as established researchers. There was an official reception on February 2, 2006.

The symposium was sponsored by the Japan Society for the Promotion of Science (JSPS) and was organized by the University of North Texas (UNT), Denton. The Japan Society for the Promotion of Science is an independent administrative institution, for the purpose of contributing to the advancement of science in all fields of the natural and social sciences and the humanities. The local chapter of the IEEE-Lasers and Electro-Optic Society will support this symposium.

The University of North Texas is the largest University in the Dallas-Fort Worth Metroplex with a student population exceeding 32,000 has recently initiated a College of Engineering to enhance technology-oriented education in Texas. The overriding theme of the conference was on nano-optics, nanoelectronics and applications of nanotechnology in the optoelectronics, chemical and biological sciences. There are several major Universities in the Dallas Fort-worth Area with program in Nanoscience and Technology. These Universities are: University of North Texas, University of Texas at Dallas, University of Texas at Arlington, University of Texas- Southwestern Medical Center, Southern Methodist University and TCU. At the University of North Texas, our aim is to establish a strong research oriented education program in the interdisciplinary field of nano-science and technology involving the Departments of Physics, Chemistry, Material Engineering, and Electronic Technology by combining the independent nanoscience program.

#### **List of Speakers:**

##### **Keynote Presentation: Hybrid Nanomaterials for optoelectronics**

Victor Agronovich, *University of Texas, Dallas, USA*

##### **Applications of Microresonators: From Photodetectors to Biological Sensing and Imaging**

M. Selim Ünlü, *Boston University, Boston, USA*

##### **Smart Polymer-Protein Conjugates in Diagnostics and Separations**

Allan Hoffman, *University of Washington, USA*

##### **Gels, MEMS, and Microfluidics**

Ronald Siegel, *University of Minnesota, USA*

##### **Thermosensitive composite nanoparticles prepared from designed block copolymer**

Haruma Kawaguchi, *Keio University, Japan*

##### **Photonic Crystal-/Quantum Dot-Based Nanophotonics for Ultra-Fast and Ultra-Low-Energy All Optical Devices**

Kiyoshi Asakawa *University of Tsukuba, Japan*

##### **Colloidal Quantum Dots for Biological Application**

Hedi Mattoussi, *Naval Research Laboratory, Washington DC USA*

##### **Nitride based Semiconductors nanostructures for optoelectronics**

Henry Everitt, *Army Research Laboratory, USA*

**InGaAs-Based Quantum Wells for Ultrafast All-Optical Switches Using Intersubband Transitions**

Teruo Mozume, *National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

**Transmission of light through a thin metal film with periodically and randomly corrugated surfaces**

Alex Maradudin, *University of California, Irvine*

**Nanophotonic Devices using Localized Photon**

Tadashi Kawazoe, *University of Tokyo, Japan*

**Anisotropy in Photonic Crystal and Plasmonic Materials**

Arkadii Krokhin, *University of North Texas, USA*

**Biological Applications of Nanoparticles an industrial perspective**

Paul Satoh, Neogen Corporation, *Lansing, Michigan, USA*

**Electromotility and Membrane Electromechanics in Nanophotonics**

Bahman Anvari, Rice University, *Houston, USA*

**Development of tissue-targeted nanoparticles for treatment of eye diseases**

Liping Tang, University of Texas, *Arlington. USA*

**Nanoscale Imaging and X ray diffraction study of materials**

Ajay Gupta, *InterUniversity Consortium, India*

**ZnO based Nanocrystal for UV light emitters**

Ichiro Hiromitsu, *Shimane University, Matsue, Japan*

**Dendrimers as Building Blocks for Nano-Scale Electronics and Photonics**

Petar R. Dvornic and Abhijit Sarkar, *Michigan Molecular Institute, Midlands, MI, USA*

**Fundamental and Applied Photonic Studies of Phosphorescent Small- and Macro-Molecules**

Mohammad Omary, *University of North Texas, Denton, TX, USA*

**Organizing Committee:**

**Program Chair: Dr. Arup Neogi (University of North Texas, Physics)**

Dr. Zhibing Hu (University of North Texas, Physics)

Dr. Abhijit Sarkar (Michigan Molecular Institute, Chemistry)

Dr. Vijay Vaidyanathan (University of North Texas, Engineering Technology)

Dr. Weidong Zhou (University of Texas, Arlington)

Dr. Purnima Neogi (University of North Texas, Biology)

Dr. Akira Masaike (Japan Society for Promotion of Sciences)