



**NATO**  
**OTAN**

**Photon-Based Nanoscience & Technology: From Atomic Level Manipulation to Materials Synthesis & Nanobiodevice Manufacturing**  
*September 19-29, 2005*  
*Sherbrooke, Québec, Canada*

**Monday, September 19, 2005**

**08:00 – 08:30** Registration and Breakfast

**08:30 – 09:00** Official Opening

**09:00 – 10:15** *Photochemistry of Molecules Absorbed at Surfaces of Solids*  
Dr. J.C. Polanyi, University of Toronto, Canada

**10:15 – 10:45** Coffee Break

**10:45 – 12:00** *Laser Interactions with Inorganic Materials – Fundamentals I*  
Dr. T. Dickinson, University of Washington, USA

**12:00 – 14:00** Lunch and Networking

**14:00 – 15:15** *Laser Interaction with Organic Materials I*  
Dr. B. Wilson, Ontario Cancer Institute, Canada

**15:15 – 16:30** *Laser Synthesis of Inorganic Materials*  
Dr. F. Traeger, Kassel University, Germany

**16:30 – 17:00** Coffee Break

**17:00 – 18:15** *Diamond Film Nanotechnology I*  
Dr. V. Konov, General Physics Institute, Canada

**19:00 – 21:00** Welcome Reception

**Tuesday, September 20, 2005**

**08:30 – 09:00** Breakfast

**09:00 – 10:15** *Laser Interactions with Inorganic Materials – Fundamentals II*  
Dr. T. Dickinson, University of Washington, USA

**10:15 – 10:45** Coffee Break

**10:45 – 12:00** *Reaction Dynamics of a Single Molecule on Si*  
Dr. J.C. Polanyi, University of Toronto, Canada

**12:00 – 14:00** Lunch and Networking

**14:00 – 15:15** *Molecular Diagnostics – Tutorial on PCR, NAT, FRET, CARS, etc.*  
Dr. S. Xie, Harvard University, USA

**15:15 – 16:30** *Nanomaterials Status and Potential Bio-Applications*  
Dr. D. Geohegan, Vanderbilt University, USA

**16:30 – 17:00** Coffee Break

**17:00 – 18:15** *Laser Interaction with Organic Materials II*  
Dr. B. Wilson, Ontario Cancer Institute, Canada

**20:30 – 22:00** *Surfaces and Bulk Properties of Inorganic Materials*  
Tutorial Session

<b>NATO Advanced Study Institute – September 19-29, 2005, Sherbrooke, Québec, Canada</b>	
<b>Wednesday, September 21, 2005</b>	
<b>08:30 – 09:00</b>	<b>Breakfast</b>
<b>09:00 – 10:15</b>	<i>Introduction to Biophotonics I</i> Dr. P. Prasad, University at Buffalo, USA
<b>10:15 – 10:45</b>	<b>Coffee Break</b>
<b>10:45 – 12:00</b>	<i>Imaging, Spectroscopy and Dynamics of Single Biomolecules and Single Cells</i> Dr. S. Xie, Harvard University, USA
<b>12:00 – 14:00</b>	<b>Lunch and Networking</b>
<b>14:00 – 15:15</b>	<i>UV Lasers – Processing Tools for Bio-MEMS</i> Dr. H. Helvajian, Aerospace Corporation, USA
<b>15:15 – 16:30</b>	<i>Diamond Film Nanotechnology II</i> Dr. V. Konov, General Physics Institute, Canada
<b>16:30 – 17:00</b>	<b>Coffee Break</b>
<b>17:00 – 18:15</b>	<i>Self-Organized Synthesis of Highly Ordered Inorganic Rigid Monolayers</i> Dr. F. Traeger, Kassel University, Germany
<b>20:30 – 22:00</b>	<i>Surfaces and Bulk Properties of Organic Materials</i> Tutorial Session
<b>Thursday, September 22, 2005</b>	
<b>08:30 – 09:00</b>	<b>Breakfast</b>
<b>09:00 – 10:15</b>	<i>Fluorescence Correlation Spectroscopy of a Fluctuation Membrane</i> Dr. M. Elbaum, Weizmann Institute of Science, Israel
<b>10:15 – 10:45</b>	<b>Coffee Break</b>
<b>10:45 – 12:00</b>	<i>Introduction to Biophotonics II</i> Dr. P. Prasad, University at Buffalo, USA
<b>12:00 – 14:00</b>	<b>Lunch and Networking</b>
<b>14:00 – 15:15</b>	<i>Molecular Design of Polymers for Laser Structuring</i> Dr. T. Lippert, Paul Scherrer Institute, Switzerland
<b>15:15 – 16:30</b>	<i>Biomedical Applications of Diamond Films</i> Dr. V. Konov, General Physics Institute, Canada
<b>16:30 – 17:00</b>	<b>Coffee Break</b>
<b>17:00 – 18:15</b>	<i>Processing of Nanoparticles by UV Laser Irradiation in a Field Cage</i> Dr. M. Stuke, Max Planck Institute, Germany
<b>20:30 – 22:00</b>	<i>Nanotechnology of Manipulation at Atomic Level</i> Tutorial Session
<b>Friday, September 23, 2005</b>	
<b>08:30 – 09:00</b>	<b>Breakfast</b>
<b>09:00 – 10:15</b>	<i>Nanophotonics – Fundamental Aspects Related to Bioapplications</i> Dr. P. Prasad, University at Buffalo, USA
<b>10:15 – 10:45</b>	<b>Coffee Break</b>
<b>10:45 – 12:00</b>	<i>Mechanics of Biomaterials</i> Dr. M. Elbaum, Weizmann Institute of Science, Israel
<b>12:00 – 14:00</b>	<b>Lunch and Networking</b>
<b>14:00 – 15:15</b>	<i>Laser-Made and Laser-Driven Nanorobots</i> Dr. M. Stuke, Max Planck Institute, Germany
<b>15:15 – 16:30</b>	<i>Thin Films Produced by PLD as Model System for Electrochemical Applications</i> Dr. T. Lippert, Paul Scherrer Institute, Switzerland

<b>NATO Advanced Study Institute - September 19-September 29, 2005, Sherbrooke, Québec, Canada</b>	
<b>16:30 – 18:30</b>	<i>Diagnostics at the Atomic and Molecular Level</i> Tutorial Session
<b>20:30 – 22:30</b>	<b>Poster Session I</b>
<b>Saturday, September 24, 2005</b>	
<b>08:30 – 09:00</b>	<b>Breakfast</b>
<b>09:00 – 10:15</b>	<i>From Biomaterials to Biomechanics</i> Dr. M. Elbaum, Weizmann Institute of Science, Israel
<b>10:15 – 10:45</b>	<b>Coffee Break</b>
<b>10:45 – 12:00</b>	<i>Laser Synthesis of Solid Nanoclusters</i> Dr. W. Marine, University of Marseille, France
<b>12:00 – 14:00</b>	<b>Lunch and Networking</b>
<b>14:00 – 15:15</b>	<i>Laser Tuning of Semiconductor Quantum Dot Emission Spectra</i> Dr. J. Dubowski, Université de Sherbrooke, Canada
<b>15:15 – 16:30</b>	<i>Manipulating and Probing Nanoparticles with Lasers</i> Dr. F. Traeger, Kassel University, Germany
<b>16:30 – 18:30</b>	<i>Design and Manufacturing of Nanomaterials</i> Tutorial Session
<b>20:30 – 22:30</b>	<b>Poster Session II</b>
<b>Sunday, September 25, 2005 – A Day to Explore Québec, Canada</b>	
<b>08:00 – 08:30</b>	<b>Breakfast</b>
<b>Monday, September 26, 2004</b>	
<b>08:30 – 09:00</b>	<b>Breakfast</b>
<b>09:00 – 10:15</b>	<i>Molecular Electronics</i> Dr. P. Grütter, McGill University, Canada
<b>10:15 – 10:45</b>	<b>Coffee Break</b>
<b>10:45 – 12:00</b>	<i>Single Wall Carbon Nanotube: An Ultimate Biosensor?</i> Dr. D. Geohegan, Oak Ridge National Laboratory, USA
<b>12:00 – 14:00</b>	<b>Lunch and Networking</b>
<b>14:00 – 15:15</b>	<i>Fs Laser Processes for Precise Nanostructuring of Inorganic Materials</i> Dr. K. Sugioka, RIKEN, Japan
<b>15:15 – 16:30</b>	<i>Photo-Excited Processes for Nanodevice Synthesis</i> Dr. A. Peled, Holon Academic Institute of Technology, Israel
<b>16:30 – 18:30</b>	<i>Design and Manufacturing of NEMS and Bio-NEMS</i> Tutorial Session
<b>20:30 – 22:30</b>	<b>Poster Session III</b>
<b>Tuesday, September 27, 2005</b>	
<b>08:30 – 09:00</b>	<b>Breakfast</b>
<b>09:00 – 10:15</b>	<i>Cloning and Expression of F1-ATPase – A Motor Protein</i> Dr. C. Montemagno, University of California, Los Angeles
<b>10:15 – 10:45</b>	<b>Coffee Break</b>
<b>10:45 – 12:00</b>	<i>Free Electron Laser: Bio-Medical Applications</i> Dr. R. Haglund, Vanderbilt University, USA
<b>12:00 – 14:00</b>	<b>Lunch and Networking</b>
<b>14:00 – 15:15</b>	<i>Integration of Semiconductors with Organic Materials</i> Dr. P. Grütter, McGill University, Canada

**NATO Advanced Study Institute - September 19-September 29, 2005, Sherbrooke, Québec, Canada**

<b>15:15 – 16:30</b>	<i>Three-Dimensional Micro and Nanochips for Biomedical Applications</i> Dr. K. Sugioka, RIKEN, Japan
<b>16:30 – 18:30</b>	<i>Bio-Intervention and Treatment Techniques</i> Tutorial Session
<b>20:30 – 22:30</b>	<b>Poster Session IV</b>

**Wednesday, September 28, 2005**

<b>08:30 – 09:00</b>	<b>Breakfast</b>
<b>09:00 – 10:15</b>	<i>Surface Plasmon Resonance: Fundamentals and Applications</i> Dr. R. Haglund, Vanderbilt University, USA
<b>10:15 – 10:45</b>	<b>Coffee Break</b>
<b>10:45 – 12:00</b>	<i>Aerosol Nanoparticles as Building Blocks for Growing Quantum Dots</i> Dr. A. Peled, Holon Institute Academic Institute of Technology, Israel
<b>12:00 – 14:00</b>	<b>Lunch and Networking</b>
<b>14:00 – 15:15</b>	<i>Laser Removal on Micro or Nanoparticles from Solid Surfaces</i> Dr. W. Marine, University of Marseille, France
<b>15:15 – 16:30</b>	<i>Nanosatellite Diagnostics: Structural and Biological Tests in Space</i> Dr. H. Helvajian, Aerospace Corporation, USA
<b>16:30 – 17:00</b>	<b>Coffee Break</b>
<b>17:00 – 18:30</b>	<i>Nanomaterials and Bio-Nanodevices – What Do We Need and How Well Can We Control their Fabrication?</i> Roundtable Discussion

**Saturday, October 9, 2004**

<b>08:30 – 09:00</b>	<b>Breakfast</b>
<b>09:00 – 10:15</b>	<i>Laser-Based Phototherapies</i> Dr. Brian Wilson, Ontario Cancer Institute, Canada
<b>10:15 – 10:45</b>	<b>Coffee Break</b>
<b>10:45 – 12:00</b>	<i>Optical Gas Sensing Properties of Laser-Shaped Nanoparticles</i> Dr. H. Ouacha, Université Moulay Ismail, Morocco
<b>12:00 – 14:00</b>	<b>Lunch and Networking</b>
<b>14:00 – 15:15</b>	<i>Nanocrystals of Vanadium Dioxide for Biodiagnostics Applications</i> Dr. R. Haglund, Vanderbilt University, USA
<b>15:15 – 16:30</b>	<i>Biological Motors and their Hybrids with Inorganic Nanodevices</i> Dr. C. Montemagno, University of California, Los Angeles, USA
<b>16:30 – 17:00</b>	<b>Coffee Break</b>
<b>17:00 – 18:30</b>	<i>Nanomedicine – Will the Photon Source be a Tool of Choice to Offer Groundbreaking Solutions?</i> Roundtable Discussion
<b>18:30 – 19:00</b>	<b>Closing Remarks</b>