NATO ADVANCED STUDY INSTITUTE

UNIVERSITÉ DE SHERBROOKE

Holon Academic Institute of Technology

NATO OTAN

vitesse
re-skilling canada inc.
réorientation professionnelle canada inc.

PHOTON-BASED NANOSCIENCE & TECHNOLOGY

From Atomic Level Manipulation to Materials Synthesis & Nanobiodevice Manufacturing

September 19-29, 2005, Sherbrooke, Québec, Canada

FIRST ANNOUNCEMENT

OBJECTIVES

BUILD a creative advanced research learning environment by bringing together world experts, researchers, Ph.D. students and postdoctoral fellows from industry, academia and government research organizations

E*XPLORE* various aspects of fundamental research on existing and emerging photon-based technologies for atomic level manipulation and nanomaterials synthesis

EXAMINE the feasibility and the need for developing the next generation of nano-biodevices for biodiagnostic, therapeutic, environmental and biodefense applications

PROVIDE an opportunity for the next generation of scientists to become familiar with the international achievements of nanoscience research and development efforts, which in turn, will allow for further advancement of their research communities' knowledge skills and motivation

MOTIVATION

Photon-based technologies, coupled with advanced materials sciences, bio and nanotechnology, can meet many of the health, environment and defense related challenges faced by human society today. This is an interdisciplinary field that comprises physics, chemistry, applied sciences and engineering, biology, and biomedical technology. The multidisciplinary nature of photon-based nanosciences and technology and the broad variety of challenges that can be potentially addressed, require a significant increase in the number of knowledgeable researchers and trained personnel in this field. This need can be met by providing a multidisciplinary training for a future generation of researchers at both graduate and postgraduate levels, world-wide. While there are many research institutes around the world dealing with different aspects of this exciting field, there are practically no opportunities for younger researchers from both NATO and NATO Partner countries to learn and share related experiences. A major challenge for young researchers working in a multidisciplinary area is the need to learn relevant concepts outside of their expertise. By providing a multifaceted overview of the field, the ASI is anticipated to become a significant international step in this direction.

DIRECTORS OF THE ASI

JAN J. DUBOWSKI, PH.D.

Professor, Université de Sherbrooke, Canada
Department of Electrical & Computer Engineering
Canada Research Chair in Quantum Semiconductors
Head, Nanotechnology of Photon Processing & Quantum Semiconductors Laboratory

AARON PELED, PH.D.

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Department of Electrical & Electronics Engineering
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LECTURERS & TOPICS

***program available online at www.vitesse.ca*

M. ELBAUM, PH.D., Senior Scientist Weizmann Institute of Science, Israel *Fluorescence correlation spectroscopy of a fluctuation membrane* *Biomaterials to biomechanics*	**P. PRASAD, PH.D.**, Professor University of Buffalo, USA *Nanophotonics - fundamental aspects related to bio-applications*	**T. DICKINSON, PH.D.,** Professor University of Washington, USA *Laser interactions with inorganic materials*
H. HELVAJIAN, PH.D., Senior Scientist Aerospace Corporation, USA *UV lasers - processing tools for bio-MEMS* *Nanosatellite diagnostics: structural and biological tests in space*	**W. MARINE, PH.D.,** Professor University of Marseille, France *Laser synthesis of solid nanoclusters* *Laser removal on micro or nanoparticles from solid surfaces*	**F. TRAEGER, PH.D.,** Professor Kassel University, Germany *Laser synthesis of inorganic nanomaterials* *Self-organized synthesis of highly ordered inorganic rigid monolayers* *Manipulation and probing of nanoparticles*
K. SUGIOKA, PH.D., Research Scientist RIKEN, Japan *Fs laser processes for precise nanostructuring of inorganic materials* *3-dimensional micro and nanochips for biomedical applications*	**M. STUKE, PH.D.,** Professor Max Planck Institute, Germany *Processing of nanoparticles by UV laser irradiation in a field cage* *Laser made and laser driven nanorobots*	**S. XIE, PH.D.,** Professor Harvard University, USA *Molecular diagnostics - tutorial on PCR, NAT, FRET, CARS, etc.* *Imaging, spectroscopy amd dynamics of single biomolecules & cells*
J. POLANYI, PH.D., Professor University of Toronto, Canada *Photochemistry of molecules absorbed at surfaces of solids* *Reaction dynamics of a single molecule on Si*	**C. MONTEMAGNO, PH.D.,** Professor University of California, Los Angelas, USA *Cloning and expression of F1-ATPase* *Biological motors and their hybrids with inorganic nanodevices*	**D. GEOHEGAN, PH.D.,** Senior Scientist Oak Ridge National Laboratory, USA *Nanomaterials: status and potential bioapplications* *Single-wall carbon nanotube: an ultimate biosensor?*
T. LIPPERT, PH.D., Senior Scientist Paul Scherrer Institute, Switzerland *Molecular design of polymers for laser structuring* *Thin films produced by PLD as model system for electrochemical applications*	**H. OUACHA, PH.D.** Professor Université Moulay Ismail, Morocco *Optical gas sensing properties of laser-shaped nanoparticles*	**R. HAGLUND, PH.D.,** Professor Vanderbilt University, USA *Free electron laser: biomedical applications* *Surface plasmon resonance: fundamentals and applications* *Nanocrystals of vanadium dioxide for biodiagnostics applications*
V. KONOV, PH.D., Senior Scientist General Physics Institute, Canada *Diamond film nanotechnology* *Biomedical applications of diamond films*	**B. WILSON, PH.D.,** Professor Ontario Cancer Institute, Canada *Laser interaction with organic materials* *Laser-based phototherapies*	**P. GRÜTTER, PH.D.,** Professor McGill University, Canada *Molecular electronics* *Integration of semiconductors with organic materials*

DEADLINE FOR APPLICATIONS: FRIDAY, APRIL 15,2005

CONTACT TO APPLY

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