

Sunday, 27.5.2007

Registration and Welcome reception

17:00-20:00 West Lounge at the Royal Victoria College, 3425 McGill University Str.

Monday, 28.5.2007

Trottier Building, room 0100

8:00-8:30 **Registration**

8:30-8:40 Welcome

Session I: Introduction Chair: A. Boisen

8:40-9:20 *Biosensors for qualitative and quantitative bio-systems analysis*
M. Hegner, Basel

9:20-10:00 *Advances in NEMS-Based Sensing*
M. Roukes, Caltech

10:00-10:30 Coffee Break

Session II: Biosensing Chair: M. Hegner

10:30-11:10 *Advancing Cancer Research via Nanomechanical Interactions*
L. Nagahara, National Cancer Institute, Bethesda

11:10-11:30 *T4 Bacteriophage functionalized cantilevers for highly specific bacterial detection*
L. Gervais, ECE, Alberta

11:30-11:50 *Polymer coated microcantilevers for biosensing applications*
G. Oliviero, Brescia

11:50-12:10 *Origin of the response of nanomechanical resonators to bacteria adsorption*
D. Ramos, IMM-CNM Madrid

12:10-13:10 Lunch (Rutherford Physics Building)

Session III: Cantilevers and Instrumentation Chair: M. Roukes

13:10-13:50 *Multifunctional cantilevers and arrays of individually exchangeable probes – a review and outlook*
U. Staufer, IMT Neuchatel

13:50-14:30 *Cantisens® Research: New Products from Concentris*
M. Bammerlin, Concentris GmbH, Basel

14:30-14:50 *Direct synthesis of silicon nanowires on silicon microcantilever sensors*
D. Lee, Pohang U, Korea

14:50-15:10 *Characterizing the lattice deformations of a silicon microcantilever*
Kh. Hassani, Physics, McGill

15:10-15:30 *Analysis of sorption-induced bending of polymer-coated microcantilever chemical sensors*
M.J. Wenzel, Marquette University

15:30-15:50 *Double sided microcantilever sensors and their viability as practical solution based sensors*
B. Seivewright, Chemistry, McGill

15:50-16:00 One minute summary of each poster

16:00-18:00 **Poster Session** (with beer and pretzels)

Tuesday, 29.5.2007

Trottier Building, room 0100

Session IV: Microfabrication and Materials Chair: U. Staufer

8:30-9:10 *Piezoresistive cantilevers for biomolecular force detection*

J. Bausells (IMB-CSIC, Barcelona)

9:10-9:50 *Structural modifications of single-walled carbon nanotubes bundles through C60 filling and electron-beam induced crosslinking*

S. Evoy (NINT, Alberta)

9:50-10:20 Coffee Break

Session V: Origin of Signal, Theory Chair: T. Thundat

10:20-11:00 *Dynamics of microcantilevers in fluids: theoretical foundations and applications*

J. Sader (Australia)

11:00-11:40 *Nature of stress response in self-assembled monolayer functionalised cantilever sensors*

M. L. Sushko (UCL)

11:40-12:00 *Microcantilever-based differential measurements: how passive is a reference cantilever?*

H. Bourque (Physics, McGill)

12:00-13:00 Lunch (Rutherford Physics Building)

Session VI: Sensor Materials and Nanomechanics Chair: H. Craighead

13:00-13:40 *Development and use of new materials and read-out principles in cantilever-based sensing*

A. Boisen (MIC Lyngby)

13:40-14:20 *Internal friction in nanomechanical resonators: mechanisms, models, and design implications*

S. Vengalatore (Mech. Eng., McGill)

14:20-14:40 *Characterization of femtoliter droplets with nanomechanical mass sensors*

J. Arcamone (CNM-IMB, Barcelona)

14:40-15:00 Coffee Break

Session VII: Systems and Modeling Chair: J. Sader

15:00-15:40 *Performance Limits of Nanobiosensors*

M. Alam (Perdue)

15:40-16:20 *Bigger is better - the intrinsic difficulty of achieving high sensitivity with nanosensors*

P.E. Sheehan (Naval Research Laboratory)

16:30 Conference Dinner at « Le Festin du Gouverneur »

Dinner Theater, Winner of *Les Grands Prix du Tourisme Québécois 2007*

Cocktail at the Fort Stewart Museum

Bus leaves in front of Trottier Building

Wednesday 30.5.2007

Trottier Building, room 0100

Session VIII: Vapour Sensing Chair: M. Godin

8:40-9:20 *Receptor Free Nanomechanical Sensing*

T. Thundat (Oakridge)

9:20-9:40 *Bridge based receptor-free sensor for explosive vapour detection*

A. Greve (MIC, DTU)

9:40-10:00 *Sensing volatile organic compounds using a portable device based on piezoresistive cantilever arrays*

A. Loui (Lawrence Livermore National Laboratory)

10:00-10:30 Coffee Break

Session IX: Instrumentation (read-out) Chair: J. Bausells

10:30-11:10 *Microfabrication of an AFM cantilever array and readout by digital holographic microscope*

H. Bleuler (EPFL)

11:10-11:30 *Demonstration of in-plane photonic transduction for microcantilever arrays*

G.P. Nordin (Brigham Young U.)

11:30-11:50 *Integrated optical read-out for polymeric micro cantilevers*

M.Nordstrom (MIC, DTU)

11:50-12:10 *Stable, temperature-compensated, very low-noise, longitudinal-transverse, piezoresistive full-bridge microcantilevers*

J.R. Mallon (ECE, Stanford)

12:10-13:30 Lunch (Rutherford Physics Building)

Session X: Biosensing Chair: H. Bleuler

13:30-14:10 *Design, fabrication and properties of nanomechanical resonators*

H. Craighead (Cornell)

14:10-14:50 *Weighing of biomolecules, single cells and single nanoparticles in fluid using suspended microchannel resonators*

M. Godin (MIT)

14:50-15:00 Closure and farewell

Optional Tours (sign up at registration desk)

Rutherford Museum (original experimental setup and lab journals)

Microfab and labs

Poster Session Monday, 28.5.2007

Trottier Building, Lobby

Sébastien Tetin
Université Bordeaux (France)

Phase measurement at fixed frequency for chemical detection using resonant microcantilevers

Martin Lorentzen
iNano, Aarhus (Denmark)

Measurements with piezoresistive cantilever

Frédéric Lochon
Université Bordeaux (France)

Optimized aspect ratios for high quality factor microcantilevers in air

Sangmin Jeon
Pohang University (Korea)

Enhanced mass sensitivity of stress-free, silicon nanowire-grown microcantilever sensors

Lee M. Fischer
U. Alberta (Canada)

PECVD SiCN NEMS Resonators for Biological Detection Applications

S.Keller
MIC, TU Denmark

Optimized fabrication of thin SU-8 cantilevers

Zachary J. Davis
MIC, TU Denmark

Fast & cheap silicon nitride micro/nano mechanical devices with integrated strain gauge readout

J. H. Hales
MIC, TU Denmark

Fabrication of HF bulk acoustic silicon disk resonators for liquid operation

Julien Arcamone
CNM-IMB, Bellaterra (Spain)

Nanomechanical mass sensor based on a full wafer integration of NEMS on CMOS by nanostencil lithography

D. Ramos
IMM-CNM, Madrid (Spain)

Origin of the response of nanomechanical resonators to bacteria adsorption

Carlo Ricciardi
Politecnico di Torino (Italia)

New insights on the influence of surface stress on microcantilever resonance: simulations and experiments

Yoshihiko Nagai
McGill University (Canada)

Integration of Cyclic Voltammetry with Micromechanical Cantilever Biosensor System

Mana Afshari
Clemson U. (USA)

A New Approach to the Modeling of Surface Stress into the Equation of Motion of a Resonating Microcantilever Beam and the Study on Its Sensitivity

T.V. Ratto
Lawrence Livermore (USA)

Chemical detection with robust polyolefin-coated cantilever Arrays

Namchul Jung
Pohang University (Korea)

Ion-induced surface stress changes of conducting polymer-coated microcantilevers