*Preliminary Program*
**(5/28/2010)**

# Nanofluids: Fundamentals and Applications II

August 15 - 19, 2010
Montréal, Canada

## Co-Chairs

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**Sunday, August 15, 2010**

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| 15:00 - 18:00 | Registration |
| 18:00 - 21:00 | Welcome Reception & Dinner |

**Monday, August 16, 2010**

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| 08:30 – 08:45 | Conference Welcome<br>Sylvain Coulombe, McGill University<br>Jules Routbort, ECI, Argonne National Laboratory |

**AM Session: Properties of Nanofluids**

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| 08:45 - 09:30 | Invited talk: J. Buongiorno, Massachusetts Institute of Technology<br>*The International Nanofluid Property Benchmark Exercise (INPBE): Results and Future Prospects* |
| 09:30 - 09:50 | Contributed talk: Y. Yang, Lehigh University<br>*Characterization of nanofluids – Particle size, thermal conductivity and viscosity* |
| 09:50 - 10:10 | Contributed talk: E. Bitaraf Haghighi, Royal Institute of Technology<br>*Transient plane source (TPS) method for measuring thermal conductivity in nanofluids* |
| 10:10 - 10:40 | Coffee break |
| 10:40 - 11:10 | Solicited talk: E. V. Timofeeva, Argonne National Laboratory<br>*Investigation of base fluid and temperature effects on heat transfer characteristics of SiC nanofluids* |
| 11:10 - 11:30 | Contributed talk: S. W. Lee, Ulsan National Institute of Science & Technology<br>*Investigation of thermal conductivity of nanofluids with liquid gallium as a base fluid for heat transfer application* |
| 11:30 - 11:50 | Contributed talk: J. Routbort, Argonne National Laboratory<br>Performance of heat-transfer fluids containing SiC and $Al_2O_3$ |
| 12:00 - 13:30 | Lunch |

**PM Session: Diagnostics and Modeling**

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|---|---|
| 13:30 - 14:15 | Invited talk: P. Huang, Binghamton University<br>*Evanescent Wave-Based Optical Diagnostic Techniques and Their Applications to Nanofluidics and Mass Transport* |
| 14:15 - 14:35 | Contributed talk: J. Avsec, University of Maribor<br>*The development of model for determination of speed of sound and thermal conductivity for nanofluids containing nanoparticles and carbon nanotubes* |
| 14:35 - 14:55 | Contributed talk: S. Ozturk, Texas A&M University<br>*Using microfluidics to probe anomalous diffusion in nanofluids* |
| 14:55 - 15:25 | Coffee break |

15:25 - 15:55 Solicited talk: J. W. Lee, Rice University
*A molecular dynamics examination of the thermal conductivity enhancement in a CNT-nanofluid system*

15:55 - 16:15 Contributed talk: P. E. Gharagozloo, Stanford University
*Characterization and modeling of thermal diffusion and aggregation in nanofluids for heat transfer*

16:15 - 17:30 Poster session/Refreshment

F. Aristizabal: Estimation of the effective thermal conductivity of nanofluids using the fluctuating lattice Boltzmann method

E. Bitaraf Haghighi: Measurement of viscosity for some water-based nanofluids with oxide nanoparticles

M. Soltani: Numerical modeling of nano-particle drug delivery to solid tumors

S. Witharana: Stability and thermophysical properties of alumina nanofluids

S. Ganguly: A model for the effective viscosity of nanofluids

S. Ozturk: Influence of tracer dye additives on the thermal and physical properties of alumina-based nanofluids

S. Gümgüm: DRBEM solution of natural convection flow of nanofluids with heat source
A. Ashrafizadeh: A numerical study using the nanofluid correlations

M. H. Kayhani: Experimental investigation of convective heat transfer of nanofluid in horizontal tube

M. A. Akhavan-Behabadi: An empirical investigation on heat transfer and pressure drop of nanofluid flow in coiled wire inserted tubes under constant heat flux

J. Avsec: Nanofluid and ferrofluid slip flow in rectangular and circular microchannels

O. Zeitoun: Experimental investigation on cooling a circular horizontal surface using a nanofluid liquid jet

K. V. Sharma: Theoretical analysis of forced convection nanofluid heat transfer in a tube with twisted tape inserts

**Tuesday, August 17, 2010**

**AM Session: Nanofluid Synthesis and Stability**

08:45 - 09:30 Invited talk: B. Yellen, Duke University
*Magnetic fluids and materials self assembly on the mesoscale*

09:30 - 09:50 Contributed talk: H. Hong, South Dakota School of Mines and Technology
*Magnetic alignment of Ni-coated single wall carbon nanotubes in heat transfer nanofluids*

09:50 - 10:10 Contributed talk: E. J. Park, Ulsan National Institute of Science & Technology
*Production and synthesis of Cu nanofluids using electrical explosion of wire in liquids*

10:10 - 10:40 Coffee break

10:40 - 11:10 Solicited talk: J. Tavares, McGill University
*Hybrid plasma synthesis of a stable copper-ethylene glycol nanofluid*

11:10 - 11:30 Contributed talk: A. Ghadimi, University Malaya
*Surfactant adding and ultrasonic processes effects on stability and characteristics of $TiO_2$-$H_2O$ nanofluid*

11:30 - 11:50 Contributed talk: A. Bagabas, King Abdulaziz City for Science & Technology
Preparation and characterization of stable water-based copper oxide nanofluids

12:00 - 13:30 Lunch

**PM Session: Heat & Mass Transfer I**

13:30 - 14:15 Invited talk: A. Hatton, Massachusetts Institute of Technology, USA
*Assisted Mass Transport*

14:15 - 14:35 Contributed talk: A. K. Suresh, Indian Institute of Technology-Bombay
*Transport property enhancement by suspended nanoparticles in gas-liquid mass transfer*

14:35 - 14:55 Contributed talk: M. A. Akhavan-Behabadi, University of Tehran
*Performance evaluation of CuO-base oil nanofluid laminar flow inside flattened tubes under constant heat flux*

14:55 - 15:25 Coffee break

15:25 - 15:55 Solicited talk: J. Veilleux, McGill University, Canada
*An experimental study of mass diffusion in nanofluids by TIRF microscopy*

15:55 - 16:15 Contributed talk: N. Prabhat, Massachusetts Institute of Technology
*A critical evaluation of anomalous convective heat transfer enhancement in nanofluids*

16:15 - 17:30 Poster session/Refreshment

W. Yu: Misleading Reynolds number comparison criterion for nanofluid heat transfer enhancement in turbulent flow

Z. W. Ding: Comparison study of single-phase and two-phase nanofluid flow models for forced convection heat transfer

P. V. Skripov: Heat exchange in nanofluids under high-power pulse heating

R. Patel: Self assembly in magnetic nanomatrix

F. Torrens: Solvents/co-solvents of single-wall carbon nanotubes: Inclusion complexes

S. Kim: Microstructure of rod shape, metal oxide nanofluids: Its implication to heat transfer enhancement mechanism

K. Ara: Characteristics of liquid sodium with suspended nanoparticles – Atomic interaction and fundamental property

V. I. Sharma: Effect of boiling time, surface roughness and contact angle on steady and time-dependent boiling heat transfer enhancement in nanofluids

S. Witharana: Stability of nanofluids in shear flow fields

M. A. Akhavan-Behabadi: Heat transfer characteristics of CuO-base nanofluid laminar flow inside coiled tubes under constant heat flux

W. A. Khan: Free convection boundary layer flow past a horizontal flat plate embedded in a porous medium filled with a nanofluids

H. Reza Seyf: Nanoparticles concentration effects on forced convective heat transfer from a vertical tube conveying Ag/Dionized water nanofluids in a cross flow air

H. Heidary: Free convection and entropy generation in rectangular cavities filled with nano-fluid with non-uniform boundary condition

**Wednesday, August 18, 2010**

**AM Session: Nanofluids: Novel Applications**

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|---|---|
| 08:45 - 09:30 | Invited talk: A. Elezzabi, University of Alberta<br>*Nanofluidic-nanoplasmonic random laser* |
| 09:30 - 09:50 | Contributed talk: B. P. McGrail, Pacific Northwest National Laboratory, USA<br>*Novel metal organic heat carriers for enhanced geothermal systems and waste heat recovery* |
| 09:50 - 10:10 | Contributed talk: D. Banerjee, Texas A&M University<br>Nanofluids and nanocomposites for thermal energy storage applications |
| 10:10 - 10:40 | Coffee break |
| 10:40 - 11:25 | Invited talk: P. Keblinski, Rensselaer Polytechnique Institute<br>*Nanoparticle heating – Basic science and biological applications* |
| 11:25 - 11:45 | Contributed talk: J.-I. Saito, Japan Atomic Energy Agency<br>*Characteristics of liquid sodium with suspended nanoparticles – Reaction property* |
| 12:00 - 13:30 | Lunch |

**PM Session: Heat & Mass Transfer II**

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|---|---|
| 13:30 - 14:15 | Invited talk: R. Taylor, Arizona State University, USA<br>*Nanofluids and their solar thermal energy applications* |
| 14:15 - 14:35 | Contributed talk: J. T. C. Liu, Brown University<br>*A theoretical consideration of nanofluid heat transfer enhancement in a developing laminar shear flow* |
| 14:35 - 14:55 | Contributed talk: A. Akbarinia, University of Bremen<br>*Uncertainty in heat transfer of nanofluids flow in microchannels with slip and non-slip flow regimes* |
| 14:55 - 15:25 | Coffee break |
| 15:25 - 15:55 | Solicited talk: T. Prevenslik, QED Radiations, China<br>*QED induced heat transfer* |

15:55 - 16:15 Contributed talk: Y. Ding, University of Leeds
*Flow and heat transfer behaviour of nanofluids in microchannels*

18:30 -21:00 Conference Dinner

**Thursday, August 19, 2010**

**AM Session: Heat and Mass Transfer III**

09:00 - 09:20 Contributed talk: S. O. Kang, Pohang University of Science & Technology
An experimental study of CHF on flow boiling using alumina-water nanofluid with wide range of mass flux

09:20 - 09:40 Contributed talk: S. Witharana, University of Leeds
Effect of nanoparticles on bubble nucleation from artificial cavities on nano-smooth silicon wafers

09:40 - 10:00 Contributed talk: S. W. Lee, Ulsan National Institute of Science & Technology
Experimental study on critical heat flux according to methods of nanofluids manufacture with pool boiling

10:00 - 10:30 Coffee break

10:30 - 10:50 Contributed talk: J. L. Alvarado, Texas A&M University
Enhancement of thermal properties of PAO nanofluid using multiwalled carbon nanotubes and alumina nanoparticles

10:50 - 11:20 Solicited talk – Liqiu Wang, University of Hong Kong
Research in nanofluids: Three key issues

11:20 - 11:30 Closing Remarks