

## Microfluidics 2004 Symposium at ASME IMECE (Anaheim, CA)

**All attendees are invited and encouraged to participate in the Fluids Engineering Division Micro and Nano Fluid Dynamics Technical Committee Meeting Sunday, November 14, 8:30pm - 9:30pm, San Simeon AB/Fourth Floor**

### FE-7B Mixing and Particulate Flows in Microsystems

**Sunday, November 14, 2004 2:00P-3:30P**

**Session Chair: Jeffrey Zahn, Penn State University**

IMECE2004-59307	Microfluidic Mixing Through Sequential Sample Injection and Rapid Expansion	Coleman and Sinton
IMECE2004-61648	Exploiting the confined twin jet instability for micro-mixing enhancement	Nahum and Seifert
IMECE2004-61902	Mixing Characteristics in a Serpentine Micro-Channel	Chamarthy and Wereley
IMECE2004-61899	Brownian particle distribution in tube flows	Cao and Wereley
IMECE2004-60743	Dynamic self-assembly in confined micro-domains	Liu, Maxey and Karniadakis

### FE-8B General Topics & Multi-Phase/Multi-Components in Microfluids

**Sunday, November 14, 2004 3:45P-5:15P**

**Session Chair: TBA**

IMECE2004-61645	Modeling thin-walled microbubbles for medical ultrasound	Sarkar, Jain and Chatterjee
IMECE2004-61083	A piezoelectric bidirectional micropump for a medical application	Doll, Goldschmidtboeing, Woias, Schrag, Heinrichs and Hopt
IMECE2004-61224	Bacterial Flagellar Motors as Microfluidic Actuators	Pooran, Al-Fandi, Tung, Kim, Lee and Kotagi
IMECE2004-62303	Buoyancy Driven Microfluidics	Chen, Qian, Wang and Bau
IMECE2004-60682	Particle Separation in Microfluidic Channels using Flow Rate Control	Yang and Zahn

### FE-10B General Fluid Dynamics Topics in Micro- and Nano-Systems

**Monday, November 15, 2004 9:30A-11:00A**

**Session Chair: Kausik Sarkar, University of Delaware**

**Note REVISED PRESENTATION ORDER**

IMECE2004-62718	<i>Invited Keynote: From MEMS to NEMS with Carbon</i>	<i>M. Madou</i>
IMECE2004-61084	Mechanisms of jet breakdown in nanoliter dispensers	Goldschmidtboeing and Woias
IMECE2004-61374	A Criterion for the Formation of Micro Synthetic Jets	Timchenko, Reizes, Leonardi and de Vahl Davis

### FE-11B Multi-phase/Multi-Component Flows in Microsystems

**Monday, November 15, 2004 11:15A-12:45P**

**Session Chair: Shelley Anna, Carnegie Mellon University**

IMECE2004-61375	Detection and analysis of high speed droplet generation in a microfluidic device	Collins and Lee
IMECE2004-61646	Destruction of Definity (R) microbubbles used for ultrasound imaging and drug delivery	Sarkar, Jain and Chatterjee
IMECE2004-61401	Experimental Investigation and Visualization of Two-Phase Flow and Water Transport in Microchannels	Hidrovo, Wang, Lee, Vigneron, Steinbrenner, Paidipati, Kramer, Eaton and Goodson

### FE-12B Electrokinetic Flows I

**Monday, November 15, 2004 2:00P-3:30P**

**Session Chair: Steven Wereley, Purdue University**

IMECE2004-60888	Continuous Particle Filtration and Concentration by Multigradient Dielectrophoresis	Fiechtner, Skulan, Barrett, Singh, Cummings and Simmons
IMECE2004-61227	Application of aligned carbon nanotubes in micro shear stress sensing	Clendenin, Rokadia, Tung and Ogburia
IMECE2004-61356	Transport Mechanisms in Electrokinetic Nanoscale Channels	Pennathur and Santiago
IMECE2004-61606	Electrokinetically-induced Flow Over a Nano-hole Array Sensor	De Leebeck, Sinton, Brolo, Arctander, Gordon and Kavanagh
IMECE2004-60598	Electrokinetic Behavior of Cylindrical Nanowires in Microfluidic Channels	Davison, Mayer and Sharp

### FE-13A Electrokinetic Flows II

Monday, November 15, 2004 3:45P-5:15P

Session Chair: Gregory Fiechtner, Office of Basic Energy Sciences (DOE)

IMECE2004-61017	A depth-averaged model for electrokinetic flows in a thin microchannel geometry	Lin, Storey and Santiago
IMECE2004-61350	Electroosmotic Pumps Fabricated From Porous Silicon Membranes	Yao, Myers, Posner and Santiago
IMECE2004-61441	Enhancement of Electrokinetically-Driven Flow Mixing in 3-D Microchannel Using Heterogeneous Surfaces	Yang and Chang
IMECE2004-62108	Dynamics of Temperature Gradient Focusing	Huber and Santiago
IMECE2004-61042	Convective Instabilities of Electrokinetic Flows in a Cross-shaped Microchannel	Posner and Santiago

### MEMST-1P Microfluids Poster Session

Tuesday, November 16, 2004 9:30A-12:00P

IMECE2004-59320	A DNA Hybridization Chip With Electrokinetically-Based Single Nucleotide Polymorphism (SNP) Discrimination	Erickson, Liu, Venditti, Krull and Li
IMECE2004-59666	Induced Flow And Motions Of Fine Solid Particles In Water With Irradiation Of YAG Laser	Watanabe, Ota and Takikawa
IMECE2004-59782	Flow Formation in Micro-Size Fluid Flow Circuit	Koizumi, Ohtake and Tabuchi
IMECE2004-60229	Numerical Simulations of Capillary Electrokinetic Pinched Injection Separation Flows in Microchannel	Farouk and Yan
IMECE2004-61001	Flow Resistance of Surface Micromachined Microfluidic Channels	Galambos
IMECE2004-61219	A Multiscale Approach to Multicomponent Wetting	Grillet, Ash, Brooks and Emerson
IMECE2004-61230	Experimental Measurement of the Depth of Correlation in Micro-PIV for High Numerical Aperture Objectives	Bourdon, Olsen and Gorby
IMECE2004-61255	Band Deformation at a T-Junction While Electrofocusing in a Dog-Leg Microchannel	Horiuchi, Dutta, Cui and Ivory
IMECE2004-61279	Manipulation of Microfluidic Flows Using Time Dependent Wall Temperatures	Mautner
IMECE2004-61334	Micro-Pneumatic Logic	Henning
IMECE2004-61409	Surface Wave Propagation of an Ultra Thin Liquid Film on a Rotating Disk	Wu
IMECE2004-59598	Flow Through a Micro-Bioreactor in a Neural Interface System	Vukasinovic and Glezer

### MEMST-1/FE-3B Advanced Measurement Techniques and Flow Studies

Tuesday, November 16, 2004 11:15A-12:45P

Session Chair: Luc Frechette, University of Sherbrooke

IMECE2004-60978	Side View Imaging for Three Dimensional Microflow Profile Reconstruction	Yang, Leyton-Mange, Dong and Zahn
IMECE2004-61020	Micro-LIF Measurement in a Micro-Channel Using an Ultra-Thin Laser Light Sheet	Kim, Yoon, Kim and Kim
IMECE2004-61847	Effects of Saturated and Degassed Solutions on Flow Through a Hydrophobic Microchannel	Tretheway, Stone and Meinhart
IMECE2004-61908	Entrance length of Low Reynolds number flow in microchannel	Lee, Jang and Wereley
IMECE2004-62096	A Microfluidic Tensiometer	Mayer and Anna

### MEMST-2/FE-1B Microfluidics devices and systems

Tuesday, November 16, 2004 2:30P-4:00P

Session Chair: Fred Forster, University of Washington

*Invited Keynote: A third 'D' for Microfluidics*

*J. Evans, Program Manager, Microsystems Technology Office (MTO) & Virtual Space Office (VSO), DARPA*

IMECE2004-59916	Feasibility Study of A MEMS Viscous Rotary Engine Power System (VREPS)	Cauley, Rosario-Rosario, Pisano
IMECE2004-60703	Design Principles and Aerodynamics of Low Reynolds Number Multi-Stage Microturbomachinery	Lee, Arslan and Frechette
IMECE2004-61413	Lumped Modeling of Crosstalk Behavior of Thermal Inkjet Print Heads	Lee, Kim, Shin, Shin, Kuk and Sohn

### **MEMST-3/FE-2B Fluid handling and actuation**

**Tuesday, November 16, 2004 4:15P-5:45P**

**Session Chair: Masashiro Ota**

IMECE2004-61644	Pulsed Micro Catalytic Combustor for Use in a Solid Piston Microengine	Green, Miller, Santavicca and Sharp
IMECE2004-60653	Is There a Best Fixed Geometry Valve for Micropumps?	Gamboa and Forster
IMECE2004-61652	An Automated System for Controlling the Laminar Flow Interface in a Microfluidic System	Kuczynski, LeDuc and Messner
IMECE2004-61705	Single-Disk and Double-Disk Viscous Micropump	Blanchard, Ligrani and Gale
IMECE2004-62177	Bubble Based Microfluidic Sensors	Ateya, Shah, Sachs and Hua

### **Other sessions of possible interest to Microfluidics2004 Symposium participants**

#### **\*\*FE-1A Electric and Magnetic Phenomena in Micro and Nano Scale Systems I**

##### **Invited Keynote Papers**

**Saturday, November 13, 2004 11:15A-12:45P**

IMECE2004-62446	Field Amplified Sample Stacking for On-Chip Capillary Electrophoresis	Santiago
IMECE2004-60575	Ion and Electron Transport in Polypyrrole Conjugated Polymer (Conducting Plastic) Micro Actuators	Shapiro

#### **\*\*FE-2A Electric and Magnetic Phenomena in Micro and Nano Scale Systems II Magnetic Phenomena**

IMECE2004-60045	Ferrofluid Transport Analysis for Micro- and Mesoscale Applications	Ganguly, Gaiind and Puri
IMECE2004-61214	Magnetorheological (MR) Jet Finishing Technology	Kordonski, Shorey and Tricard
IMECE2004-61668	A Circular Magneto-Hydrodynamics(MHD) Micropump With Electrolyte Solution	Shen
IMECE2004-60301	Simulation of Magneto-Rheological Fluids using Lattice Boltzmann method	Yadav, Calhoun, Phelan, Vuppu, Garcia and Hayes

#### **\*\*FE-3A Electric and Magnetic Phenomena in Micro and Nano Scale Systems III Electric Phenomena**

**Saturday, November 13, 2:00P-3:30P**

IMECE2004-62301	Controlled Nano Assembly of Particles and Molecules with Dielectrophoretic Forces	Reigelman, Liu, Arsenault, Kim and Bau
IMECE2004-60479	Field-induced dielectrophoresis and Phase Separation in Suspensions	Khusid, Bennett, James, Galambos, Okandan, Jacqmin, Kumar, Qui, Yeksel and Sigurdson, Meinhart and Wang
IMECE2004-62013	AC Electrokinetics for Biosensors	
IMECE2004-61529	Dielectrophoresis of Nanoparticles	Singh, Kadaksham and Aubry

#### **\*\*MEMST-4 Micro-Fluidics & Thermal**

**Wednesday, November 17, 2004 7:45A-9:15A**

**Session Chair: TBA**

IMECE2004-62111	Design of a Microfabricated Device for the Ligase Detection Reaction (LDR)	Barrett, Maha, Wang, Soper, Nikitopoulos and Murphy
IMECE2004-61769	Modeling and Characterization of MEMS Thermal Biosensors	Wang, Sipe and Lin
IMECE2004-61807	Performance of Micro/Meso-Scale Thermal Transpiration Pumps at Low Pressures	Han, Young and Muntz
IMECE2004-61516	A Hybrid CFD-Mathematical Model for Simulation of a MEMS Loop Heat Pipe	Ghajar, Darabi and Crews
IMECE2004-62091	Limiting Performance of High Throughput Continuous Flow micro-PCR	Chen, Hashimoto, Mitchell, Nikitopoulos, Soper and Murphy

#### **\*\*MEMST-6 Micro-Fluidics & Thermal II**

**Wednesday, November 17, 2004 11:15A-12:45P**

**Session Chair: TBA**

IMECE2004-59597	Design, Fabrication, and Mixing Characteristics of an Electrostatically Activated Resonant Micropump-Mixer	Tsao and Mohseni
IMECE2004-62115	Fabrication and Testing of High Aspect Ratio Metal Micro-Gas Chromatograph Columns	Bhushan, Yemane, Goettert, Overton and Murphy
IMECE2004-62170	Disposable Polydimethylsiloxane/Silicon Hybrid Chips for Protein Detection	Li, Fozdar, Shao, Chen, Floriano, Christodoulides, Ali, Dharshan, McDevitt and

IMECE2004-61836	AC Electrokinetic Pumps for Micro/NanoFluidics	Wu, Soni, Wang and Meinhart
IMECE2004-60970	Models for Joule Heating Dispersion in Complex Electrophoretic Separation Microchannels	Wang, Lin and Mukherjee