

Acoustofluidics 2013

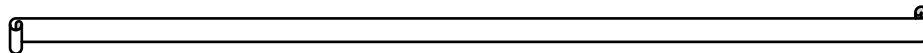
UNIVERSITY OF
Southampton

Conference Program

Lectures are held in the *Nuffield Lecture Theatre A (06/1077)*, Highfield Campus, University of Southampton.

Time	DAY 1: Thursday September 12th
10:00 onwards	Registration in the Hartley Suite (<i>Staff club, Bldg. 38</i>) and mounting posters.
10:00	USWnet Management meeting (also open to interested, non-board members) <i>Held in the Hartley Suite.</i>
13.00	Conference opening (Nuffield Lecture Theatre, Lecture Theatre A)
13.15-13.55	Keynote lecture – Tony Jun Huang "Acoustic Tweezers: Manipulating Bio-particles and Fluids Using Acoustic Waves" Department of Engineering Science and Mechanics, The Pennsylvania State University, USA
Session I – Particle Separations	
14.00-14.20	"Acoustic properties of liquids impact the separation efficiency" Per Augustsson ¹ , Sameer Deshmukh ^{1,2} , Thomas Laurell ¹ 1) Lund University, Sweden 2) Warsaw University of Technology, Poland.
14.20-14.40	"Macro-scale acoustophoresis with applications in oil water emulsion splitting" Bart Lipkens ^{1,2} , Ben Ross-Johnsrud ^{1,2} , Brian McCarthy ^{1,2} , Louis Masi ² , and Jason Dionne ^{1,2} 1) Western New England University, USA 2) FloDesign Sonics Inc., USA
14.40-15.00	"Continuous-flow ultrasonic concentration of bacteria for water quality analysis" Dario Carugo, Dyan N Ankrett, Walid Messaoudi, Nick R Harris, Martyn Hill and Peter Glynn-Jones University of Southampton
15.00-15.45	Coffee & posters in the Hartley Suite
15.45-16.10	Invited lecture – Bruce Drinkwater "Multi-element arrays for dextrous acoustic manipulation" University of Bristol, UK
Session II – Modelling 1	
16.10-16.30	"Full numerical simulation of the acoustic radiation force" Mads J. Herring Jensen ¹ and Henrik Bruus ² 1) COMSOL, Denmark; 2) Technical University of Denmark
16.30-16.50	"Theoretical And Experimental Evaluation Of The Time-Averaged Viscous Torque For The Rotation Of Micro Particles" Andreas Lamprecht, Thomas Schwarz, Jingtao Wang, Jurg Dual ETH, Zurich
16.50-17.10	"Interaction force between rigid spheres in a micro channel" Shahrokh Sepehrirahnama ¹ , Kian-Meng Lim ^{1,2} and Fook Siong Chau ¹

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	1) National University of Singapore 2) NUS (Suzhou) Research Institute, Jiangsu.
17.10-17.20	Break
17.20-17.45	Invited lecture - Thomas Franke University of Augsburg, Germany.
17.45-18.05	"Surface Acoustic Waves for On-Demand Single Picoliter Droplet Production" Adrian Neild, David J. Collins, Kristian Helmersen, and Alan Tuncay Monash University, Australia
19:00-23:00	Conference Banquet in Hartley Suite (Staff Club, Bldg. 38 – enter by steps at far end)



Time	DAY 2: Friday September 13th
Session IV – Modelling 2	
09.05-09.25	"Multipole expansion method for calculation of acoustic radiation force on non-spherical objects" Kian-Meng Lim ^{1,2} and Shahrokh Sepehrirahnama ¹ 1) National University of Singapore 2) NUS (Suzhou) Research Institute, Jiangsu.
09.25-09.45	"Numerical simulation of acoustophoresis for particles of arbitrary shape, size and structure" Philipp Hahn, Thierry Baasch, Jurg Dual ETH Zürich.
09.45 -10.05	"Underlying physics of the emergence of negative radiation forces on spheres illuminated by zero-order Bessel beams" Mahdi Azarpeyvand, University of Cambridge.
10.05-10.30	Coffee break and posters
Session V – Mixed ultrasound topics	
10.30-11.10	Keynote 2 – Tim Leighton "Cold water cleaning using acoustofluidics" University of Southampton
11.10-11.30	"Impedance matched channel walls in acoustofluidic systems" Ivo Leibacher, Sebastian Schatzer, Jürg Dual ETH, Zurich.
11.30-11.50	"Acoustic trapping used for bead incubation in a Luminex-based multiplex biomarker assay" Maria Tenje ¹ , Hongyan Xia ^{2,3} , Mikael Evander ¹ , Björn Hammarström ¹ , Axel Tojo ¹ , Sándor Belák ^{2,3,4} , Thomas Laurell ^{1,5} and Neil LeBlanc ^{3,4} 1) Lund University, Sweden 2) Swedish University of Agricultural Sciences, Uppsala 3) The World Organization for Animal Health (OIE) Collaborating Centre for the Biotechnology-based Diagnosis of Infectious Diseases in Veterinary Medicine Uppsala, Sweden 4) The National Veterinary Institute (SVA), Uppsala 5) Dongguk University, Korea
11.50-12.10	"Particle attraction to membranes with evanescent standing waves " Jeremy J. Hawkes, University of Manchester
12.10-12.30	"High-speed camera observation of droplet atomization and coagulation in an ultrasonic standing wave field"

Time	DAY 2: Friday September 13th
	Marina Reißweber, Felix Brand, Gerhard Lindner Coburg University of Applied Sciences and Arts
12.20-13.20	Lunch
Session VI – Biological applications	
13.20-13.45	"Live Cell Imaging in a Micro-Array of Acoustic Traps Facilitate Quantification of Natural Killer Cell Heterogeneity" A.E. Christakou ¹ , M. Ohlin ¹ , B. Vanherberghen ¹ , M.A.Khorshidi ¹ , N. Kadri ² , T. Frisk ¹ , M. Wiklund ¹ and B. Önfelt ^{1,2} 1) KTH - Royal Institute of Technology, Sweden 2) Karolinska Institute, Stockholm, Sweden
13.45-14.05	"Application of a novel perfusion bioreactor with integrated ultrasound standing wave trap for augmentation of cartilage tissue engineering" Siwei Li, Peter Glynne-Jones, Martyn Hill, Richard O C Oreffo, and Rahul S Tare University of Southampton.
14.05-14.25	"Sonoporation in the absence of contrast agent: a 'gentle' way to deliver therapeutic agents" Dyan Ankrett, Dario Carugo, Peter Glynne-Jones and Martyn Hill Univeristy of Southampton.
14.25-14.45	Coffee break
Session VII – Devices and Integration	
14.45-15.05	"Integrated acoustic micro particle manipulation and imaging system" A.L. Bernassau, M. Al-Rawhani and D.R.S. Cumming University of Glasgow
15.05-15.25	"Online Frequency Tracking in Acoustic Trapping" Björn Hammarstöm, Mikael Evander, JacobWalström, Thomas Laurell, Johan Nilsson Lund University, Sweden.
15.25-15.45	"Electronic Controlled Piezoelectric Array for Ultrasonic Particle Manipulation in an Acoustic Resonator" Han Wang ¹ , Yongqiang Qiu ¹ , Christine Demore ¹ , Sandy Cochran ¹ , Peter Glynne-Jones ² , Martyn Hill ² 1) University of Dundee, UK; 2) University of Southampton
15.45-15.55	Announcing "Acoustofluidics 2014" and closing remarks
16.00	End

Posters:

<p>"Multi-frequency characterisation of a chip for microbubble trapping" Chris Fury^{1,2}, Pierre N. G�lat^{1,2}, Philip H. Jones², Gianluca Memoli¹ 1) National Physical Laboratory, UK 2) University College of London, UK.</p>
<p>"Numerical simulation of 3D acoustophoretic motion of microparticles in an acoustofluidic device" Junjun Lei, Peter Glynne-Jones and Martyn Hill University of Southampton</p>
<p>"Acoustic trapping of Rayleigh-size particles using complex Gaussian-shape beams" Mahdi Azarpeyvand University of Cambridge</p>
<p>"Temperature dependence of acoustic streaming inside droplets induced by Lamb waves" Wei Liang, Gerhard Lindne Coburg University of Applied Sciences and Arts, Germany.</p>
<p>"Temperature Controlled Multi-Well Chip Device Using a PID Regulated Liquid Heat Exchanger" Mathias Ohlin, Martin Wiklund KTH - Royal Institute of Technology, Sweden</p>
<p>"Deformation and vibration of confined liquid droplets on a aluminium substrate excited by piezoelectric transducers" Matthias Streller, Gerhard Lindner Coburg University of Applied Sciences and Arts, Germany.</p>
<p>"Creating sheets of bronchial epithelial cells within Sonotweezers" Angela Tait, Peter Glynne-Jones, Dyan Ankrett, Martyn Hill , Donna Davies University of Southampton</p>
<p>"Acoustic streaming: a general analytical solution" Jonas T. Karlsen, Mikkel W.H. Ley, Peter B. Muller, Henrik Bruus Technical University of Denmark</p>
<p>"Ultrasonic Needle Device for Cell Membrane Disruption and Local Mixing in a Microfluidic Chip" Ida Iranmanesh, Harisha Ramachandraiah, Mathias Ohlin, Aman Russom, Martin Wiklund KTH - Royal Institute of Technology, Sweden</p>
<p>"Accelerated Cell Sorting Using In_line Sample Pre-Enrichment" Brian Warner¹, Liping Yu¹, Joe Trotter¹, Maria C. Jaimes¹, Marko Blom², Wilfred Buesink², Andreas Lenshof³, Thomas Laurell³ 1) BD Biosciences, USA; 2) Micronit Microfluidics, The Netherlands; 3) Lund University, Sweden</p>
<p>"Orientation of Erythrocytes for Flow Cytometry" Ola Jakobsson, Carl Grenvall, Thomas Laurell Lund University, Sweden</p>
<p>"Finite element modelling of cell deformation by acoustic radiation forces" Puja Mishra, Peter Glynne-Jones and Martyn Hill University of Southampton</p>
<p>"Ultrasonic Large-Scale Separation – Review and Application in Milk Fat Skimming" Linda Johansson^{1,2}, Thomas Leong^{1,2}, Pablo Juliano², Raymond Mawson², Sally McArthur¹, Richard Manasseh¹ 1) Swinburne University of Technology, Australia 2) CSIRO Animal, Food and Health Sciences, Australia</p>
<p>"Elastomeric Negative Acoustic Contrast Microparticles for Flow Cytometry Assays " Kevin W. Cushing^{1,3}, Menake E. Piyasena¹ Nick J. Carroll¹ Gian C. Maestas¹ Beth Ann Lopez¹ Bruce S. Edwards¹ Thomas Laurell³ Steven W. Graves¹ and Gabriel P. Lopez^{1,2} 1) The University of New Mexico, United States 2) Duke University, United States 3) Lund University, Sweden</p>
<p>"Modeling of the formation of bands on a multiband resonator –Comparison of two approaches: diffusion equation and two phase model" Francisco Javier Trujillo, University of New South Wales</p>