Technical Program

8th International Electrokinetics Conference (ELKIN 2008)

May 18 – 23

Santa Fe, New Mexico – USA

Sunday Evening, May 18

5:30 – 9:30 PM: Welcome Reception and Registration - The Bishop's Lodge

Monday Morning, May 19

Fundamentals of Electrokinetics

Session Chairs: Dennis Prieve and Joel Cohen

8:00	Opening and Welcome **Amr Abdel-Fattah/LANL Management/ELKIN IAB**
08:30	***Plenary Lecture 1***: What does a Zeta Potential Really Mean? **Hans Lyklema**
09:10	A New Generalization of the Standard Electrokinetic Model J.J. López-García, **Constantino Grosse**, and J. Horno
09:30	***Special Talk***: Field-Induced Structuring and Orientation in Sphere-Sphere and Sphere-Rod Binary Mixtures of Charged Colloidal Particles L Fornasari, M. L. Jimenez, F. Mantegazza, and **Tommaso Bellini**
10:00	**Coffee Break**
10:30	Experiments on Travelling-Wave Electroosmosis Pablo García-Sánchez, **Antonio Ramos**, Nicolas G. Green, and Hywel Morgan
10:50	Colloids as a Model System to Explore Complex Matter **Charles Reichhardt**
11:10	Electrokinetic Flow Instabilities in Non-Dilute Colloidal Suspensions **Jonathan D. Posner** and Guru Navaneethum
11:30	Dynamic Electrokinetic Similarities across Nano, Micro And Macro Scales: Micro-Nano Channel Junctions and Macroscopic Ion-Selective Membranes **Gilad Yossifon** and Hsueh-Chia Chang
11:50	Dielectric Reflectance Spectroscopy of Aqueous Dispersions **John Texter**
12:15	**Lunch**

Monday Afternoon, May 19

Electrokinetics of Complex Surfaces and Biological Systems

Session Chairs: Gabriel López and Kevin Dorfman

01:40	***Plenary Lecture 2:*** Exploring Biopolymers at Interfaces with Streaming Potential/Streaming Current Measurements **Carsten Werner**
02:20	Charging of Polymers in the Presence of Mono and Multivalent Ions **Ralf Zimmermann**, Martin Espig, Nelly Rein, Martin Müller, and Carsten Werner
02:40	Application of Electrokinetic Methods for the Prediction of Adsorption Properties of Proteins on Separation Material in Downstream Processing **Egbert Müller**, Alexander Faude, and Anna Moosmann
03:00	Zeta Potential and Surface Free Energy Changes of Phospholipid (DPPC) Solid Supported Layers caused by Enzyme Phospholipase A_2 (PLA_2) **Malgorzata Jurak** and Emil Chibowski
03:20	Electrophoresis of Soft, Multi-Layered Bacteriophage Particles, Application to Microorganisms Elimination by Membrane Filtration Jérémie Langlet, Fabien Gaboriaud, Christophe Gantzer, and **Jérôme F.L. Duval**

03:40	**Coffee Break**
04:10	Electrohydrodynamic Manipulation of Giant Unilamellar Vesicles **William D. Ristenpart**, S. Lecuyer, O.Vincent, and H.A. Stone
04:30	Effect of Enzymes on DPPC/n-Tetradecane Emulsion at Different Temperatures Agnieszka Ewa Wiacek, Lucyna Holysz and **Emil Chibowski**
04:50	Electrokinetic Characterization of Coated Nanogold. Universal Drug Delivery System through the Blood-Brain Barrier **Julian L. Viota**, F. Zanuttin, S. Biffi, and S. Krol
08:00 PM	**Poster Session/Mixer**

Tuesday Morning, May 20

Electrokinetics in Earth and Environmental Sciences

Session Chairs: Jacob Masliyah and Peter Roberts

08:20	***Plenary Lecture 3*:** Electrokinetics in the Earth Sciences **Frank Dale Morgan**
09:00	Measurements of Streaming Potential and Resistivity in Well-Graded Soils **Megan R. Sheffer**, P.M. Reppert, and J.A. Howie
09:20	Permeability Determination using Frequency-Dependent Electrokinetics (Can it be Practical?) **Philip M. Reppert**, Zhenya Zhu, and F. Dale Morgan
09:40	Seismoelectric Measurements of Rock Samples in the Laboratory **Zhenya Zhu**, M. Nafi Toksöz, and Xin Zhan
10:00	**Coffee Break**
10:30	Self-Potentials Caused by Subsurface Fluid Flow Through Electrokinetic Coupling **Tsuneo Ishido**
10:50	Application of Electrokinetics to Geophysical Problems: Insights from Field Experiments and Numerical Studies **Seth S. Haines** and Steven R. Pride
11:10	Effects of Seismic Waves on the Distribution of Two Immiscible Fluids in Porous Media: Frequency Dependence, Resonance, and Blob Mobilization **Markus Hilpert**, and Shao-Yiu Hsu
11:30	Low-Frequency Stress-Induced Mobilization of Colloids in a Synthetic Porous Core **Peter M. Roberts**, R.H. Ibrahim, A.I. Abdel-Fattah, R.E. Beckham, and S. Tarimala
11:50	Shaking up Permeability **Jean E. Elkhoury** and Emily E. Brodsky
12:10	**Lunch**

Tuesday Afternoon, May 20

Electrokinetics in Low-Dielectric Fluids/General Topics

Session Chairs: Frank Dale Morgan and Philip Reppert

01:40	***Plenary Lecture 4:*** Colloidal and Interfacial Science for Better Understanding of Bitumen Extraction **Jacob Masliyah** and Zhenghe Xu
02:20	A New Method in Reservoir Electrokinetic Interpretation using Well Test Streaming Potential Transient Data **Saad F. Alkafeef**, Nab M. Alajmi, and Abdullah F. Alajmi
02:40	Two Independent Measurements of Debye Lengths in Doped Nonpolar Liquids **Dennis C. Prieve**, J.D. Hoggard, R. Fu, P. J. Sides and R. Bethea
03:00	Space Charge Limited Dynamics in a Nonpolar Liquid **Matthias Marescaux,** F. Beunis, F. Strubbe and K. Neyts
03:20	Measurement of Elementary Charges on Colloidal Particles **Filip Strubbe**, Bart Verboven, Filip Beunis, and Kristiaan Neyts
03:40	**Coffee Break**
04:10	Image-Charge Interactions in Nonsymmetric Systems **Ludmila B. Boinovich**, A.M. Emelyanenko

04:30	Confocal Microscopy Study of Electrostatic Colloidal Sediments **Richard E. Beckham**, Pradip Bahukudumbi, Michael Bevan
04:50	Comprehensive Study of the Charging of the Calcite/Water Interface **Rasmus Eriksson**, Juha Merta and Jarl. and B. Rosenholm
05:10	Effective Charge in Nanocolloidal Suspensions: Example of Maghemite Nanoparticles **Serge Durand-Vidal**, I.T. Lucas, G. Meriguet, O. Bernard and P. Turq

Wednesday Morning, May 21

Nonlinear Electrokinetics/Electro-Microfluidics (Fundamentals and Applications)

Session Chairs: Todd Squires and Dimiter Petsev

08:30	***Plenary Lecture 5***: Induced-Charge Electrophoresis of Metallo-Dielectric Particles **Martin Z. Bazant**, Mustafa Sabri Kilic , Sumit Gangwal, Olivier Cayre and Orlin D. Velev
09:10	Effect of the Difference in Ion Mobilities and Faradaic Currents on AC Electro-Osmosis Antonio González, **Antonio Ramos**, Pablo García-Sánchez, and Antonio Castellanos
09:30	Relaxation in Induced-Charge Electroosmotic Flows **Gilad Yossifon**, Itzchak Frankel, and Touvia Miloh
09:50	Steric Effects on AC Electro-Osmosis in Dilute Electrolytes **Brian D. Storey**, Lee R. Edwards, Mustafa Sabri Kilic, and Martin Z. Bazant
10:10	**Coffee Break**
10:40	Design, Fabrication, and Testing of an Induced Charge Electroosmotic Mixer **Cindy K. Harnett**, Jeremy Templeton, Katherine A. Dunphy-Guzman, Yehya M. Senousy, and Michael P. Kanouff
11:00	AC Electro-Osmotic Pumps for Manipulating Biological Solutions Chien Chih Huang, John Paul Urbanski, Damian Burch, Martin Bazant, and **Todd Thorsen**
11:20	Nonlinear Dynamics of Electrokinetic Instabilities **Jonathan D. Posner** and Juan G. Santiago
11:40	Nanoparticle DEP Dynamical Focusing: Model And Theory **Sophie Loire** and Igor Mezic
12:00	**Lunch**

Wednesday Afternoon, May 21

Electro-Microfluidics (Fundamentals and Applications)

Session Chairs: Martin Bazant and Jonathan Posner

01:30	***Plenary Lecture 6***: Electrokinetics over Inhomogeneous Surfaces **Todd Squires**
02:10	Concentration Polarization-Based Nonlinear Electrokinetics in Hierarchically-Structured Porous Media **Ulrich Tallarek**
02:30	Numerical Analysis of Electrokinetic Transport at Micro-Nanofluidic Interfaces in Hydrodynamic Flow and Applications in Sample Preconcentration **Yi Wang**, K. Pant, Z. J. Chen, W. Diffey, P. Ashley, and S. Sundaram
02:50	The Effect of Ion Depletion-Accumulation in Micro-Nanofluidic Interconnect Devices **Xiaozhong Jin** and N. R. Aluru
03:10	Electrokinetic transport in nanofluidic channels **Derek Stein**, Yongqiang Ren, Frank van der Heyden, Douwe Bonthuis, and Cees Dekker
03:30	**Coffee Break**
04:00	Transport Control in Micro and Nanochannels S. -T. Chang, O. D. Velev, V. N. Paunov, and **Dimiter N. Petsev**
04:20	DNA Electrophoresis in Microfabricated Arrays Jia Ou, Jaeseol Cho, Dan Olson, Mike Meloche, and **Kevin D. Dorfman**
04:40	Development of Nanofluidic Systems for Biomolecular Analysis **Gabriel P. López**, S. R. J. Brueck, Sang M. Han, Cornelius F. Ivory, and Dimiter N. Petsev
05:00	Detection of Cholera Toxin on Microfluidic Chip Based on Affinity Microcolumn and Micellar Affinity Microcolumn Electrophoresis **Mangesh T. Bore**, Aurelio Evangelista, Cristina Ferraro, Linnea K. Ista, Steven R. J. Brueck, and

	Gabriel P. Lopez
7:00 PM	**IAB Meeting**

Thursday Morning, May 22

Colloid Behavior under the Effect of External Fields/General Topics

Session Chairs: Antonio Ramos and John Texter

08:00	**ANNOUNCEMENTS**
08:30	Optical Trapping Electrophoresis: Direct Measurement of Electrical and Drag Forces Brian Todd and **Joel Cohen**
8:50	Design of Photo-Switchable Superhydrophobic to Superhydrophilic Surfaces **Samuel T. Picraux**, Dongqing Yang, S. G. Choi, P. Aella, Antonio A. Garcia
09:10	Electrokinetics of Concentrated Suspensions of Soft Particles in AC Fields S. Ahualli, M.L. Jiménez, F.J. Arroyo, F. Carrique, and **Angel V. Delgado**
09:30	Charge and Size of Polyelectrolytes and Complexes determined from Electrophoresis NMR Ute Böhme and **Ulrich Scheler**
9:50	Effect of Magnetic Field on the Rheological Behavior of Aqueous Suspensions of Anisotropic Magnetite-Covered Sepiolite Particles **Fernando González-Caballero**, M. M. Ramos-Tejada, C. Galindo-González, M. T. López-López, and J. D. G. Durán
10:10	**Coffee Break**
10:40	Acoustically-Induced Surface Clustering and Microstreaming of Colloidal Particles Amr Abdel-Fattah, **Sowmitri Tarimala**, and Peter Roberts
11:00	Electroacoustic Study of Titania at High Concentrations of 1-2, 2-1 and 2-2 Electrolytes **Marek Kosmulski**, Piotr Prochniak, and Jarl B.Rosenholm
11:20	The Polarization of an Elongated Cylindrical Particle Suspended in an Electrolyte Solution and Subjected to an AC Electric Field **Hui Zhao**, Mark Arsenault, and Haim H. Bau
11:40	Microslit Electrokinetic Experiments Provide Insight into the Charging and Structure of Cellulose Films **Uwe Freudenberg**, Ralf Zimmermann, Stefan Zschoche and Carsten Werner
12:00	**Lunch**

Thursday Afternoon, May 22

Electrokinetics in Earth and Environmental Sciences/General Topics

Session Chairs: Amr Abdel-Fattah and Robert Roback

01:30	***Plenary Lecture 7:*** Colloid Transport and Colloid-Facilitated Contaminant Transport During Steady and Transient Flow Through Unsaturated Porous Media **James E. Saiers**, T. Cheng, and B. Gao
02:10	Can Electrokinetic Measurements Improve Our Understanding of Field-Scale Colloid-Facilitated Contaminant Transport? **Paul W. Reimus**
02:30	Effect of Cation Species on the Surface Cation Exchangeable Sites and in Bulk Solution on the Transport of Engineered Zeolite Nanoparticles and Natural Colloids under Saturated Conditions **Peng Wang** and Arturo A. Keller
02:50	Electrostatics and the Acid-Base Chemistry of montmorillionite Christophe Labbez, **Fabien Thomas**
03:10	Colloid-Facilitated Transport of Plutonium in Saturated Porous Media **Amr I. Abdel-Fattah**, S. Doug Ware, Marc J. Haga, Paul W. Reimus, and Sean D. Reilly
03:30	**Coffee Break**
04:00	Modeling of Contaminant Degradation by Chemotactic Bacteria: Exploring the Formation and Movement of Bacterial Bands Markus Hilpert and **Wei Long**

04:20	Modeling Electrokinetic Phenomena in Polymer Electrolyte Fuel Cells **Partha P. Mukherjee,** Qinjun Kang, Hari S. Viswanathan, and Peter C. Lichtner
04:40	Modeling of Attractive and Repulsive Electrostatic Interaction in the Process of Random Sequential Adsorption at Heterogeneous Interfaces **Pawel Weronski**
05:00	**ANNOUNCEMENTS**
06:30 PM	**Banquet**

Friday Morning, May 23

9:00 – 11:00 AM:	Open Panel Discussion "Future of Electrokinetics: *which directions should the ELKIN Community talk?*"
11:00 – 12:00 Noon:	Session Chairs meeting: Talks/Posters rankings and Award Recipients
12:00 – 2:00 PM	Outdoor lunch (BBQ), Awards, Closing