

## Monday, May 21st – Historical Developments. Fundamentals.

8:15 Registration (on the day)

9:00 **Opening Words**

9:20 **Scientific Sessions**

*Chairs: Hiroyuki Ohshima*

9:20 **K1** **Keynote: Staffan Wall**  
The Early History of Electrokinetics

9:45 **PL1** **Plenary: Hans Lyklema**  
Joint Development of Insight into Colloid Stability and Surface Conduction

10:25 **Coffee Break**

*Chairs: Hans Lyklema*

10:55 **K2** **Keynote: Hiroshi Maeda**  
A Historical Overview of the Concept of the Counterion Condensation

11:20 **G1** **R. Roa, F. Carrique and E. Ruiz-Reina**  
Electrokinetics of Spherical Particles in Salt-Free Concentrated Suspensions Including Ion Size Effects

11:38 **G2** **P. Turq, B. Rotenberg, A. Botan, V. Marry, B. Siboulet and J.F. Dufreche**  
Multiscale Hydrodynamics and Electrokinetics in Clay and Silica Nanopores

11:56 **Lunch**

**Poster Session, *Chairs: Takanori Akagi / Sosaku Ichikawa***  
**(Core Time: 13:10–14:10 for odd poster number, 14:10–15:10 for even poster number)**  
**IAB Meeting**

*Chairs: Theo G.M. van de Ven / Emil Chibowski*

15:20 **K3** **Keynote: Ehud Yariv, Ory Schnitzer and Itzchak Frankel**  
Streaming–Potential Revisited

15:45 **G3** **Thomas Luxbacher**  
Streaming Potential and Streaming Current Measurements Elucidate Liquid–on–Solid Adsorption Processes

16:03 **G4** **M. Iwata, T. Tanaka and K. Fujihara**  
Electroosmotic Dewatering of Gelatinous Materials

16:21 **G5** **K. Wojciechowski and K. Linek**  
Can We Detect Ion–Specificity using Electrokinetic Measurements ?

16:39 **G6** **U. Freudenberg, Y. Müller, R. Zimmermann, A. Potthast, T. Rosenau, C. Nitschke, G. Scherr and C. Werner**  
Characterization of NMMO–Reconstituted Cellulosic Materials

16:57 **Coffee Break**

*Chairs: Thomas Luxbacher / Angel V. Delgado*

17:20 **G7** **Constantino Grosse**  
Extension of a Classic Low Frequency Dielectric Dispersion Theory of Colloidal Suspensions Including Different Ion Valences, Broad Frequency Range, and Stagnant Layer Conductivity

17:38 **G8** **Claire Chassagne**  
Electrokinetic Response of Clays: Exact Solutions and Applications

17:56 **G9** **M.L. Jiménez, F. Mantegazza, L. Fornassari, M.C.D. Mourad and T. Bellini**  
Electric Birefringence of Gibbsite Platelets

18:14 **G10** **Peter J. Beltramo and Eric M. Furst**  
Dielectric Spectroscopy of Colloidal Suspensions Across the Fluid–Crystal Transition

18:32 **G11** **S. Yagihara, Y. Maruyama, Y. Kishi, R. Kita, N. Shinyashiki and M. Fukuzaki**  
Dielectric Study on Fractal Water Structures in Dispersion Systems

18:50 **Close**

**Reception**

## Tuesday, May 22nd – Non-Aquatic System. Hydrophobic Colloid. Microfluidics.

8:30 Registration (on the day)

*Chairs: Ko Higashitani / Constantino Grosse*

- 9:00 **PL2** **Plenary: Thomas W. Healy** and Douglas W. Fuerstenau  
Surfactant Adsorption... Electrokinetic Demonstrations of the Hydrophobic Effect
- 9:40 **K4** **Keynote: Filip Beunis**, F. Strubbe, M. Karvar, O. Drobchak, T. Brans and K. Neyts  
Inverse Micelles as Charge Carriers in Nonpolar Liquids
- 10:05 G12 E. Chibowski, L. Holysz and A. Szczes  
Some Curious Wetting and Electrokinetic Properties of Cholesterol
- 10:23 G13 D. Lerche and T. Sobisch  
Screening of Total Interaction Energy by in Situ Visualization of Separation Behaviour

10:41 **Coffee Break**

*Chairs: Filip Beunis / Pierre Turq*

- 11:05 G14 Ko Higashitani and Cathy E. McNamee  
Molecular-Scale Change in the Surface Properties of Copper and Silica in pure Water and High pH Solutions with Time
- 11:23 G15 A. Zhukov, F. Gareeva, N. Petrova and O. Shenderova  
Electrokinetic Properties of Detonation Nanodiamond Agglomerates in Aqueous Electrolyte Solutions
- 11:41 G16 Marcelo Lozada-Cassou and Hector Manzanilla-Granados  
A New Model for the Stability and Mobility of Finite Colloidal Concentration
- 11:59 G17 R. Kimura, K. Tsuchiya and Y. Mori  
Fabrication of Silica Nanoparticle Arrays by DC Electrophoretic Deposition

12:17 **Lunch**

*Chairs: Hideyuki Sugioka / Carsten Werner*

- 14:10 **K5** **Keynote: Todd Squires**  
Induced Charge Electrokinetic Phenomena -- Fundamentals, Applications, and Extensions
- 14:35 G18 Myung-Suk Chun and Kwang Seok Kim  
Secondary Microflows in Electro-Osmotic Transport with Hydrodynamic Slippage Effect
- 14:53 G19 Reghan J. Hill and Aliasghar Mohammadi  
Dynamic Electrical Response of Hydrogel-Loaded Microchannels
- 15:11 G20 A. Ramos, P. García-Sánchez, J.J. Arcenegui, Y. Ren and H. Morgan  
Experiments on Electrorotation and Dielectrophoresis of Metallic Microparticles

15:29 **Coffee Break**

*Chairs: Todd Squires / Antonio Ramos*

- 15:50 **K6** **Keynote: Masaki Sano**  
Fluctuating Dynamics of Active Colloids
- 16:15 G21 Christian J. C. Biscombe, Malcolm R. Davidson and Dalton J. E. Harvie  
Electrokinetic Flow in Parallel Channels: Circuit Modelling for Microfluidics and Membranes
- 16:33 G22 J. D. Berry, A. E. Foong, C. Lade, E. Ross, E. E. Faisal, C. Biscombe, M. R. Davidson and D. J.E. Harvie  
Electroviscous Flow through Microfluidic Contractions, Bends and Junctions
- 16:51 G23 Hideyuki Sugioka  
Observation of Asymmetrical Reverse Vortex Flow due to Induced-Charge Electro-Osmosis Around Stacking Structures
- 17:09 G24 Carsten Werner, Ralf Zimmermann, Dirk Kuckling, Martin Kaufmann and Jérôme F. L. Duval  
Charging and Structure of Poly (N-Isopropylacrylamide-co-Carboxyacrylamide) Soft Thin Films: Insights from Microslit Electrokinetic Experiments and Ellipsometry
- 17:27 G25 Andriy Yaroshchuk  
What Makes a Nano-Channel? A Limiting-Current Criterion
- 17:45 **Close** Shuttle Bus to BQ Hall will start by 17:50

18:30 **BQ** **18:50–20:50**

## Wednesday, May 23rd – Measurements and Instrumentation. Soft-and Porous Interface.

8:30 Registration (on the day)

*Chairs: Dennis C. Prieve / Shinichi Takeda*

- 9:00 **K7** **Keynote: Andrei Dukhin**  
ISO Standards 13099–1,2,3 : Methods for Zeta Potential Determination – Parts 1, 2 and 3
- 9:25 G26 Th. Palberg, T. Köller, B. Sieber, H. Schweinfurth, H. Reiber, and G. Nägele  
Electro-Kinetics of Charged Sphere Suspensions Explored by Integral Low Angle Super-Heterodyne Laser Doppler Velocimetry
- 9:43 G27 Satoshi Nishimura and Takahito Inoue  
Electric Orientation of Plate-Like Silica Particles under AC Electric Field
- 10:01 G28 Theo G.M. van de Ven and Han Yang  
Electrosterically Stabilized Nanocrystalline Cellulose
- 10:19 G29 F. Strubbe, F. Beunis, T. Brans, M. Karvar, W. Woestenborghs and K. Neyts  
Study of the Electrophoretic Retardation Effect for Nonpolar Colloids

10:37 **Coffee Break**

*Chairs: Thomas W. Healy / Claire Chassagne*

- 11:00 G30 Dennis C. Prieve and Paul J. Sides  
Streaming Potentials Generated Outside a Porous Rotating Disk
- 11:18 G31 T. Brans, F. Strubbe, F. Beunis and K. Neyts  
Optical Tweezing Electrophoresis for Biodetection Applications
- 11:36 G32 K. Neyts, M. Karvar, O. Drobchak, F. Strubbe and F. Beunis  
Charge Transport and Steady State in Non-Polar Media between Planar Electrodes with Insulating Layers
- 11:54 G33 E. A. Disalvo, A. M. Frias and A. M. Bouchet  
Electrophoretic Mobility and Zeta Potential of Liposomes: A Link to Function Properties of Surface Potential in Lipid Membranes

12:12 **Lunch**

*Chairs: Kazuho Nakamura / Xiao-yan LI*

- 13:30 G34 H. Matsumoto, S. Imaizumi, M. Minagawa and A. Tanioka  
Nanosize Effect of Sulfonated Carbon Nanofiber Fabrics for High-Capacity Ion-Exchanger
- 13:48 G35 R. Zhao, M. van Soestbergen, H.H.M. Rijnaarts, A. van der Wal, M.Z. Bazant and P.M. Biesheuvel  
Time-Dependent Ion-Selectivity in Capacitive Charging of Porous Electrodes
- 14:06 G36 S. Ahualli, M.L. Jimenez and A.V. Delgado  
Donnan Potential Difference as a Source of Clean Energy
- 14:24 G37 A.V. Delgado, S. Ahualli, M.M. Fernández and G. Iglesias  
Blue Energy Production by Capacitive Mixing. Electrokinetic Model and Experiments

14:42 **Coffee Break**

*Chairs: Jerome F.L Duval / Huan-Jang Keh*

- 15:05 G38 Orly Schnitzer and Ehud Yariv  
Electrokinetic Flows over Highly Charged Surfaces
- 15:23 G39 A. V. Sybachin and A. A. Yaroslavov  
Electrokinetic Methods for the Study of Formation, Structure and Stability of Liposome/Polymer Complexes
- 15:41 G40 Owen A. Hickey, Gary W. Slater, James L. Harden and Christian Holm  
Molecular Dynamics Simulations of Charged Polymer Coatings for Modulating Electroosmotic Flow
- 15:59 G41 Hong-Ming Lo and Jyh-Ping Hsu  
A Cylindrical Particle of Constant Charge Density in a Cylindrical Pore

16:17 **Coffee Break**

*Chairs: Reghan J. Hill / Owen A. Hickey*

- 16:40 **K8** **Keynote: Jerome F.L Duval**  
ElectroHydrodynamics of Soft Planar and Particulate Multilayered Interphases
- 17:05 **K9** **Keynote: Huan-Jang Keh** and P. Y. Huang  
Diffusiophoresis of a Charged Composite Sphere in Electrolyte Gradients
- 17:30 G42 Fei Li and Reghan J. Hill  
Nanoparticle Gel Electrophoresis
- 17:48 G43 Hiroyuki Ohshima  
Electrophoretic Mobility of Soft Particles. A Soft Step Function Model

18:10 **Close**

## Thursday, May 24th – Environmental Electrokinetics. Closing (AM)

8:30 Registration (on the day)

*Chairs: Wang Dongsheng / Tasuma Suzuki*

9:00 K10 **Keynote: T. David Waite**, He Di and Shikha Garg  
Impact of Charging and Discharging Behavior of Silver Nanoparticles on Reactive Oxygen Species Generation

9:25 G44 Zygmunt Sadowski and Izabela Wrobel  
Effect of Arsenic Species Adsorption on Colloidal Hematite Particles and Their Collective Transport through Porous Media

9:43 G45 Xiao-yan LI and Xiao-mao WANG  
Modeling of Membrane Fouling Caused by Particle Deposition during Water Filtration

10:01 G46 Farook Ahmed, Munehide Ishiguro and Takeo Akae  
Effect of Electrolyte on the Adsorption of Sodium Dodecylbenzene Sulfonate on High Humic Volcanic Ash Soil

10:19 **Coffee Break**

*Chairs: David Waite / Munehide Ishiguro*

10:45 G47 Matthieu Siebentritt, Grégory Lefèvre, Polina Volovitch and Kevin Ogle  
Adsorption and Electroreduction of Hematite on Steel in Strong Alkaline Media

11:03 G48 M. Z. Jaafar, A. Pourbasirat and M. A. Manan  
Measurement of Electrokinetic Potential on Carbonate Rocks for Monitoring Water Movement in the Oilfield

11:21 G49 Wang Dongsheng, Chen Youjun, Wu Xiaohong and Chow Chris WQ  
Particle Size Effect of IPF: Coagulation Behavior of Al<sub>13</sub> and Al<sub>13</sub> Aggregates

11:39 G50 T. Suzuki, M. Niinae, T. Koga, T. Akita, M. Ohta and T. Choso  
EDDS Enhanced Electrokinetic Remediation of Heavy Metal-Contaminated Clay Soils under Neutral pH Conditions

11:57 **Close**

# Poster List

Chairs: *Takanori Akagi / Sosaku Ichikawa*

- Poster P1 Hideyuki Sugioka  
Observation of Asymmetrical Reverse Vortex Flow due to Induced-Charge Electro-Osmosis around Stacking Structures
- Poster P2 Wang Dongsheng, Chen Youjun, Wu Xiaohong, Chow Chris WQ and Huang Chiping  
Hydrolyzed Al(III)-Clusters: Speciation Transformation and Stability of Al<sub>13</sub> Aggregates
- Poster P3 Pham Viet Dung and M. Ishiguro  
Effect of Phosphate Sorption on the Zeta Potential and Dispersion-Flocculation of Ferralsol Soils
- Poster P4 Yu-Kui Fu and Jyh-Ping Hsu  
The Diffusiophoresis Behavior of a Charge-Regulated Particle in Multiple-Ionic-Species Solution without Boundary Effect
- Poster P5 Yasuyuki Kusaka, Naoyuki Ishida and Hirobumi Ushijima  
An AFM Study on Effects of Surface Forces on Formation of Two Dimensional Colloidal Monolayers
- Poster P6 Chien-Pai Yee and Jyh-Ping Hsu  
Electrophoresis of a Spherical Particle in a Charge-Regulated Cylindrical Pore
- Poster P7 Chih-Yuan Lin, Jyh-Ping Hsu and Li-Hsien Yeh  
The Electrophoretic Behavior of Spheroid Polyelectrolytes with Various Shapes
- Poster P8 Fei Li and Reghan J. Hill  
Nanoparticle Gel Electrophoresis
- Poster P9 O. Drobchak, M. Karvar, F. Strubbe, F. Beunis and K. Neyts  
Optical and Electrical Characterization of Micellar Solutions
- Poster P10 M. Karvar, F. Strubbe, F. Beunis, R. Kemp, A. Smith, M. Goulding and K. Neyts  
Study of Double Layer Formation of Aerosol OT Inverse Micelles in Nonpolar Liquids
- Poster P11 M. Z. Jaafar, A. Pourbasirat and M. A. Manan  
Measurement of Electrokinetic Potential on Carbonate Rocks for Monitoring Water Movement in the Oilfield
- Poster P12 K. Nakamura and K. Matsumoto  
The Response of Streaming Potential to Fouling Configuration During Microfiltration of Particulate Matter
- Poster P13 L. Holysz, A.E. Wiącek and E. Chibowski  
Influence of DPPC Aggregate Structures on TiOS<sub>2</sub> Zeta Potential Suspension
- Poster P14 L. Holysz, A.E. Wiącek, E. Anitowska, A.V. Delgado and E. Chibowski  
The Electrokinetic and Rheological Behaviour of Phosphatidylcholine Treated TiO<sub>2</sub> Suspensions
- Poster P15 Motoyoshi Kobayashi and Ayano Sasaki  
Electrophoretic Mobility of Latex Spheres in Mixture Solutions Containing Mono and Divalent Counter Ions
- Poster P16 Hirofumi Kanoh, Masahiro Shinohe and Tomonori Ohba  
Structural Analysis of Polypeptides Adsorbed on Nanoporous Carbons
- Poster P17 I. Ikeda and M. Matsumoto  
Charged Colloidal System: Small Ion Distribution and Effective Interaction
- Poster P18 Antonio Ramos, Neophytos Loucaides and George E. Georghiou  
Numerical Simulation of Travelling Wave Electrokinetics with Faradaic Currents
- Poster P19 Kazuyoshi Ogawa and Etsuo Kokufuta  
Electrophoretic Behavior of the Complex Formed Between Cu<sup>2+</sup> ions and Microgel Consisting of N-Isopropylacrylamide and N-Vinylimidazole in Salt-Free Solution
- Poster P20 K. Ohtani, M. Fukuyama, T. Katakura, M. Hayakawa and T. Kanai  
Fabrication of Microfluidic Devices by Stereolithography
- Poster P21 Yingnan Yang, Qinghong Wang and Zhenya Zhang  
Evaluation of Modified Porphyritic Andesite at High Concentration of Ammonium in Anaerobic Digestion
- Poster P22 K.B. Korzhynbayeva, S.M. Tazhibayeva, A.B. Orazymbetova, K.B. Musabekov and A.A. Zhubanova  
Influence of Surfactants on Electrokinetic Potential of Yeast Cells

- Poster P23 Y. Tsujimoto and Y. Adachi  
Analysis of Electroviscous Effects of Na-Montmorillonite Dilute Suspensions under Low Shear Stress
- Poster P24 Chun Yu Shih and Ryoichi Yamamoto  
Direct Numerical Simulation of Electrophoresis of Charge Colloids in AC Field
- Poster P25 M. Fukuyama and T. Kanai  
Preparation of Dumbbell-Like Particles by Use of Shrinkage of PNIPAm Gel Particles
- Poster P26 M. Akai-Kasaya, Y. Okuaki, S. Nagano, A. Saito and Y. Kuwahara  
Nonlinear Transport in Two-Dimensional Polymer Monolayer
- Poster P27 T. Ishido and N. Matsushima  
Streaming Potential Measured for an Intact Rock Sample at Temperatures to 200°C
- Poster P28 I. Kobayashi, T. Katami, M. Neves, K. Uemura and M. Nakajima  
Influence of Electrolyte Concentration on Microchannel Oil-in-Water Emulsification
- Poster P29 Y. Adachi and D. Ohyama  
Sedimentation and Electrophoresis of Fractal Floccs
- Poster P30 Koji Asami  
Low-Frequency Dielectric Dispersion in Biological Cell Suspensions
- Poster P31 Takeshi Nashima  
Experimental Study of Difference between Streaming Current and Electroosmosis in Single Fused Silica Capillaries
- Poster P32 M. Nakajima, A.M. Chuah, T. Kuroiwa and I. Kobayashi  
The Influence of Polysaccharide on the Stability of Protein Stabilized Oil-in-Water Emulsion Prepared by Microchannel Emulsification Technique
- Poster P33 K. Kato, M. Kobayashi, T. Akagi and T. Ichiki  
Development of a Zeta Potential Measurement System for Individual Nanovesicle using Microcapillary Electrophoresis Chips with Laser Light Scattering
- Poster P34 Naoyuki Ishida, Yasuyuki Kusaka and Hirobumi Ushijima  
Force between Hydrophobic Silica Surfaces – Measurement of ‘True’ Hydrophobic Attraction
- Poster P35 T. Inoue, Y. Ideguchi, M. Nishi, A. Oyane, T. Uemura and T. Suda  
Dielectrophoretic Trap and Flow Control for Cell Separation in Microfluidic Channels
- Poster P36 Thomas Palberg and Alexander Reinmüller  
Self-Organized Electro-kinetic Propulsion of Granular Objects by Colloidal Particles
- Poster P37 M. Makino and M. Doi  
Simulations of Arbitrary Shaped and Non-Uniform Charged Particles
- Poster P38 Sosaku Ichikawa, Naoya Iwata and Seigo Sato  
Stability Control of Large Oil Droplets by Layer-by-Layer Multicoatings using Polyelectrolytic Dietary Fibers
- Poster P39 Sosaku Ichikawa, Shunsuke Nakano, Takashi Kuroiwa and Seigo Sato  
Nanoparticles Entrapments inside Giant Vesicles by Controlling the Electrostatic Interaction with Lipid Membrane
- Poster P40 Sosaku Ichikawa, Ayako Matsuzaki, Mitsutoshi Nakajima and Sukekuni Mukataka  
Molecular Self-Assembly of Fatty Acid and Polyglycerin Fatty Acid Ester in Aqueous System
- Poster P41 Kwang Seok Kim, Jihoon Jeon and Myung-Suk Chun  
Electrokinetic Flow Imaging in Well-Designed Microfluidic Channels to Analyze Hydrodynamic Slip Behavior
- Poster P42 Lianhua Jin, Motoyoshi Kobayashi and Yasuhisa Adachi  
The Effect of Flow Velocity on the Deposition of Latex Particles in the Column Packed with Toyoura Sand
- Poster P43 T. Kurimura, M. Takinoue, M. Hase, M. Ichikawa and K. Yoshikawa  
Rhythmic Motion of a Micro Water Droplet under DC Voltage
- Poster P44 T. Ogawa, T. Tamaki, H. Ohashi, H. Ushiyama, K. Yamashita and T. Yamaguchi  
Fast Proton Conduction at the Interface of Zr Particle and Electrolyte Polymer
- Poster P45 H. Saito and T. Sawada  
Electric Double Layer and Corrosion
- Poster P46 María A. Frías, Axel Hollmann and E. Anibal Disalvo  
Coordination Forces between Lipid Bilayers Produced by Divalent Cations
- Poster P47 Hitoshi Umino and Noriaki Hakoishi  
An Evaluation of Coagulation Performance on Turbid Water Treatment in a Reservoir Using Colloidal Coagulant

- Poster P48 Y. Nishida, R. Takechi, K. Tsuchiya, Y. Mori, H. Shimaoka and S. Totoki  
Size Distribution Analysis of Nanoparticles Measured by Induced Grating Method
- Poster P49 Tien Duc Pham, Motoyoshi Kobayashi and Yasuhisa Adachi  
Electrokinetic Characterization of  $\alpha$ -Alumina by Streaming Potential
- Poster P50 K. Nagata, Y. Yawata, E. Setoyama, K. Toda, J. Fukuda, H. Suzuki, H. Uchiyama and N. Nomura  
Use of a Microfluidic Device for Monitoring Growth and Metabolism of Microorganism
- Poster P51 B. Basaruddin, N. F. Abu Bakar, M. Nazli Naim and R. A. Abdol Aziz  
Effects of Bubbles Formation During Electrophoresis by Continuous and Pulse DC
- Poster P52 Lili Feng, Azusa Kobayashi and Yasuhisa Adachi  
Kinetic of Brownian Flocculation of PSL Particles with Cationic Polyelectrolyte Against Ionic strength
- Poster P53 Takanori Akagi and Takanori Ichiki  
On-Chip Electrophoresis of Human Promyelocytic Leukemia Cells during Neutrophil Differentiation
- Poster P54 Yutaka Kazoe and Minami Yoda  
Interfacial Dynamics of Colloidal Particles Affected by External Electric Fields Measured by Evanescent Wave-Based Particle Tracking Technique
- Poster P55 Kyojiro Morikawa, Yutaka Kazoe, Kazuma Mawatari, Takehiko Tsukahara and Takehiko Kitamori  
The Electrical Conductivity of Water in Extended-Nano Channels Determined by Streaming Potential Measurement System
- Poster P56 T. Enomae, K. Dogome and A. Isogai  
Geometrical Control of Silver Tracks on Paper Substrates by Altered Surface Energy
- Poster P57 H. Schweinfurth, T. Palberg, and B. Sieber  
Complementary Real- and Fourier Space Investigations on Charged Sphere Electrokinetics Reveal the Importance of Optimized Sample Preparation Protocols