



# AES NEWSLETTER

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Contact Matt Hoelter AES Executive Director with questions about the society [matt-aes@tds.net](mailto:matt-aes@tds.net)



**Minneapolis, MN, heartland, is the site of the annual meeting of the American Electrophoresis Society on Oct 16-21, 2011. Please join us!**

The American Electrophoresis Society (AES), in association with the American Institute of Chemical Engineers (AIChE), is proud to be part of the 2011 Annual Meeting in Minneapolis, MN, and to provide a forum for the latest progress in electrophoretic technology. We are excited to announce the addition of four new sessions this year and for the first time AES will have parallel sessions! We are pleased to present descriptions of the planned 13 sessions of the meeting on the following pages. The meeting will include four sessions on Electrokinetics and Electrophoresis, two sessions on Microfluidics and Bioanalysis, one on Biomedical Diagnostics, two on DNA and Protein Analysis, and one on Electroporation. Additionally, we will have an Award session, a Plenary session, and a Poster session. Late breaking submissions for the Poster session will be accepted until **September 30th** and are encouraged from any aspect of electrophoresis. This year's Poster session will include awards for the best student posters, based on judging by 3 members of the AES council, of \$100 for First Place and \$50 for Second Place for student members of the Society. The Poster Reception is scheduled for Tuesday, Oct 18, while the AES Banquet will take place on Wednesday, Oct 19 at a local restaurant. We look forward to seeing you there. **Call for Papers closes on May 2<sup>nd</sup> 2011.**



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**AES 2011 Meeting Co-Chairs**

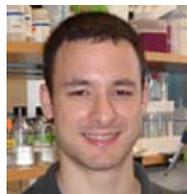
## AES MEETING PROGRAM - 2011

### T3001 Plenary Session of the American Electrophoresis Society

Invited lectures from leading researchers in the area of electrokinetics. These researchers are being asked to focus on a particular area of their interest and explain how their research in the area of electrokinetics has provided key insights and/or enabled key applications.



**Chair: Blanca Lapizco-Encinas**  
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**Co-Chair: Zachary Gagnon**  
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### T3002 Advances In Electrokinetics and Electrophoresis: Fundamentals

Electrokinetics involves the use of electrical fields and electrical forces (between surfaces and particles) to produce a motion of colloidal particles within a medium. This environment could be either a fluid, porous or fibrous medium. Notable applications include those related to environmental process such as the decontamination of water or a soil, the cleaning of water for drinking purposes, and the decontamination of industrial effluents; electrostatics aspects in membrane-based separation processes is another excellent example and micro-filtration in electrically enhanced processes is yet another. Within this framework, a detailed analysis of particle-to-particle electrostatics forces, the experimental measurements of their magnitude and computer-based simulation approaches are relevant for the advance of processes and technology involving electrokinetics principles. Therefore, contributions with novel approaches related to fundamental principles, modeling, and experimental studies will be welcomed. We would like to have a balance between a given problem, the motivation, and the outcome related to the solution. However, purely experimental contributions describing new and novel aspects of electrokinetics will be welcomed as well as theories and computational efforts helping to improve understanding of outstanding fundamental problems.



**Chair: Yolanda Fintschenko**  
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### T3003 Microfluidics: Bioanalytical Applications

Remarkable progress has been made in the fabrication micro- and nano-scale devices for the manipulation and detection of organisms and biomolecules. This session will focus on integration and detection aspects related to the emerging concept of a 'chip-in-a-lab' as well as the more established 'lab-on-a-chip' systems. Topics of interest include, but are not limited to, platforms for multi- and unicellular analysis (biochemical or physical), immunosensors, electrochemical sensors, and various spectroscopic and separation tools in a microchip format. We are particularly interested in papers dealing with micro/nano scale systems and issues related to molecular (biochemistry), cellular, or systems biology. Both experimental and theoretical contributions are welcome.



**Chair: Edgar D. Goluch**  
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### T3004 Fundamentals of Electrokinetic Flows: Novel Applications and Ionic Fluxes at Interfaces

The talks in this session will focus on fundamental aspects of novel electrokinetic flows. This session specifically welcomes experimental, theoretical, and computational studies of electrokinetic flows involving ionic fluxes across interfaces due to heterogeneous reactions or between microchannels and nanochannels, membranes, and porous media. Example phenomena of interest include catalytic "Janus" nanomotors, concentration polarization, electrophoresis of ion-selective particles, biological ion channels in membranes, and intercalation dynamics in batteries. All topics on fundamental electrokinetics are welcome and are not limited to areas listed here within.



**Chair: Christa N. Hestekin**  
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### T3005 Biomedical Diagnostics

Medical diagnostic kits encompass a wide variety of portable analytical devices used to monitor and screen for medical conditions. They are rapidly being developed for use on a single-test basis and show promise as indispensable tools for clinical research, medical laboratories, and at home self-testing. The terms "microdevice," "microchip," "lab-on-a-chip," and "micro-electromechanical systems" all refer to small, versatile, inexpensive, rapid-response devices that may be engineered for biomedical applications. Research in the areas of sample introduction, preparation, electrokinetic transport of biofluids, development of quantitative detection sensors, and the incorporation of genomic and proteomic biomarkers are needed to further the advancement of biomedical microdevices.

Novel microanalytical tools are welcome, specifically those impacting applications such as genetic predisposition testing, rapid diagnosis of the presence of a particular disease or disorder, or those monitoring the efficacy of drug therapies. The goals of this session are to bring together researchers from academia, research labs, and industry to exchange ideas with the potential to revolutionize medical diagnostics.



**Chair: Soumya K. Srivastava**  
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### T3006 Nanoscale electrokinetics

This session will focus on fundamentals and applications of nanoscale electrokinetic phenomena. This regime is often associated with geometrical (or device) dimensions comparable to the Debye length, leading to anomalous electrokinetic behavior not seen in larger-scale systems. In particular, this session welcomes experimental, theoretical, and computational investigations of electrokinetic effects in nanochannels, nanopores, and nanoslots. Topics of interest include: concentration polarization; current rectification (e.g., "nanofluidic diodes"); over-limiting current and second-kind electro-osmosis; biomolecule transport across nanochannels; preconcentration, separation, sensing, and desalination in nanodevices; energy conversion via streaming currents; and theoretical extensions to the classic (Poisson-Nernst-Planck) description of electrokinetics relevant to highly concentrated nanoscale systems. While the areas listed above are indicative of the flavor of the session, all topics on nanoscale electrokinetics are welcome.



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### T3007 Electrokinetic Behavior of Microparticles and Nanoparticles: Fundamentals and Applications

The papers in this session deal with (a) fundamental studies on the behavior of micro and nanoparticles in the presence of electric fields, or (b) how the electrokinetic or electrochemical properties of these particles are utilized for specific applications in various areas such as Biological Sensors, Biomedical Diagnostics, and Environmental Protection. Specific topics include, but are not restricted to: microfluidic networks and their applications (including mixing, reaction, separations, or transport processes); complex particles and surfaces (nanoparticles, heterogeneous particles, biological cells, soft particles); electrokinetically-directed assembly; electrokinetic effects in non-polar media; novel applications of electrokinetic phenomena (biosensors, displays, environmental or chemical assays); and novel measurement techniques (electrophoretic mobility, charge nonuniformity, forces, electro-acoustics, electro-optics).



**Chair: Mark Hayes**  
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### T3008 DNA Analysis in Microfluidic and Nanofluidic Devices

This session of contributed presentations will focus on the use and modeling of DNA electrophoresis in microfabricated and nanofabricated devices. Topics of interest include design and fabrication, simulation and theoretical modeling of the transport phenomena in existing technologies, and applications.



**Chair: Alexandra Ros**  
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*This year, AES is pleased to team up with the journal ELECTROPHORESIS to publish a special proceedings issue highlighting selected manuscripts associated with work presented in at the AES Annual Meeting. See AES webpage for details.*

### T3009 Microfluidics - Detection

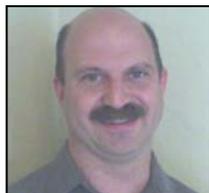
The objective of this session is to bring together researchers from academia, research laboratories, and industry to exchange ideas to advance microfluidics detection, including detection, diagnostics and measurement in microfluidics platforms. The applications cover the detection of chemical and biological agents in clinical diagnostics, homeland security, food and environment monitoring, industrial process monitoring, and developing new functionality for research in life science, etc. The term microfluidics applies also to "microdevice," "microchip," "lab-on-a-chip," "micro-total analysis system," "micro-electro-mechanical systems (MEMS)," and "BioMEMS." Papers that cover the relevant sample preparation and transport phenomena (including electrokinetics) in microanalytical detection, novel detection technology, development of detection sensors, new application of microfluidics detection, and the incorporation of genomic and proteomic biomarkers are encouraged to submit to this session.



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### T3010 Advances in Electrophoretic Protein Separation and Analysis

Studies of protein expression patterns play a vital role in understanding the complex responses of cells, tissues, and organisms to stimuli or mutations. While recent developments have allowed these patterns to be investigated at an unprecedented level of detail, further advances are needed in order to fully illuminate the interplay among the many factors governing cellular response. Specifically, new technologies are needed that provide quantitative information with high sensitivity and throughput. This session will focus on the development of such proteomic technologies and their applications. Of particular interest are papers describing advances in electrophoretic protein separations, novel means of detecting and quantifying proteins, methods of analyzing specific protein classes, mass spectroscopic methods, and other related technologies. Papers are also sought that present research on the proteomic analysis of post-translational modifications.



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### T3011 Electroporation and Electrophysiology

Microfluidic platforms are becoming increasingly important for handling and studying cells and tissues. Electroporation is an important technique employed in molecular biology to transform cells. Significant research efforts are devoted to the development of robust and inexpensive microdevices for cell electroporation. Cell dielectric properties are required for the design of many electrokinetic-based separations. Many research studies are being carried out with the aim of developing microsystems for electrophysiology applications to study the electrical properties of cells and tissues. This session will cover the latest advancements in microfluidics platforms employed for cell electroporation and cell electrophysiology.



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### T3012 Award Session of the American Electrophoresis Society in Honor of Kelvin Lee

This is the first Award Session of AES and it will honor the people who have made significant contributions to electrophoresis and to AES, and whose work is well known in both the engineering and biology communities. Awardees will receive a commemorative plaque and a lifetime membership to AES. This session is by invitation only.



**Chair: David E. Garfin**  
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### T3013 Poster Session for the American Electrophoresis Society

The organizers of this session invite poster submissions in the area of electrophoretic technology and development. Topics of interest include new experimental or theoretical research involving any aspect of electrophoresis at either the macro-, micro-, and / or nano- scales. Late breaking submissions for the Poster Session will be accepted until **September 30th**. This year's poster session will include awards for the *best student posters*, based on judging by 3 members of the AES council, of \$100 for First Place and \$50 for Second Place for student members of the Society.



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