



AES NEWSLETTER



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Session Descriptions **2-4**

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Our traditionally strong meetings, with sessions strengthened by invited plenary speakers discussing state-of-the-art topics, would simply not be possible without help from sponsors. Their donations are greatly appreciated.

Nashville: what's good for country music will be terrific for the American Electrophoresis Society on Nov 8-13, 2009, Ya'll Come!

The American Electrophoresis Society (AES), in association with the American Institute of Chemical Engineers (AIChE), is proud to be part of the 2009 Annual Meeting in Nashville, Tennessee and to provide a forum for the latest progress in electrophoretic technology. With the recent completion of the abstract submission process, we are pleased to present descriptions of the finalized 11 sessions of the meeting on the following pages. The meeting will include four sessions on Biomems and Microfluidics, two sessions on Advances in Electrokinetics and Electrophoresis, and one on Advances in Proteomics. Further, this meeting will include three new sessions on Nanoscale Electrokinetics, DNA Analysis in Microfluidic & Nanofluidic Devices, and Electrokinetic Behavior of Micro and Nanoparticles: Fundamentals and Applications. Late breaking submissions for the Poster Session will be accepted until October 19th and are encouraged from any aspect of electrophoresis from the macro to nano-scales. 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 Nov 10, while the AES Banquet will take place on Wednesday Nov 11 at a local restaurant. We look forward to seeing you there.

Invite your colleagues to join AES online at www.aesociety.org

Send news for the web page to webmaster Adrienne Minerick minerick@che.msstate.edu



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AES 2009 Meeting Co-Chairs

AES MEETING PROGRAM - 2009

T3000 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 and micro-filtration in electrically enhanced processes are excellent examples. 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.



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T3000 Advances in Electrokinetics and Electrophoresis - Particles and Biomolecules

Electrokinetic techniques continue to play a leading role in technologies ranging from nanoparticle characterization and directed electronics assembly to micropumps and micromixers to biosensors and DNA sequencing. In this session, we invite submissions related to the development of new technologies in any of these areas, from both the fundamental and applied perspectives. Suitable topics include: 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).



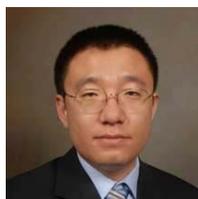
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T3000 Biomems and Microfluidics: Cell and Biomolecule Analysis:

Electrophoresis continues to be an integral tool for the analysis of biomolecules in both basic biology and medicine, and is now being adapted to the microfluidic device format. The ability to study processes at the single-cell level promises to provide a host of information with benefits in the area of therapeutics and drug discovery. In this session, we invite papers describing microfluidic technology to probe chemical and biochemical responses at the cellular and sub-cellular levels. In addition, we welcome contributions focused on any related aspects including simulation and modeling studies, materials modification to improve system performance, and novel sample preparation protocols.



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TWO SESSIONS FOR BIOMEMS AND MICROFLUIDICS

T3000 Biomems and Microfluidics: Biomedical Diagnostics I

T3000 Biomems and Microfluidics: Biomedical Diagnostics II

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.



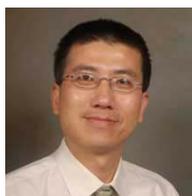
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T3000 Biomems and Microfluidics: Novel Applications

Biological microsystems and microfluidic devices have developed significantly in recent years. Many of these systems have evolved beyond the technology development stage into applications in clinical and commercial areas. While the traditional application areas have primarily been within the realms of diagnostics and sensing, these technologies have advanced into other areas such as cell separation, platforms for tissue engineering, platforms to study stem cell behavior, implantable prosthetic devices, and drug delivery systems, to name only a few. This session aims to bring together researchers from academia, industry, and government working in a broad spectrum of novel application areas.



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T3000 Nanoscale Electrokinetics

In nanometer-scale systems the electric double layer (EDL) thickness is comparable to characteristic length scale of the system. In these systems the EDLs can overlap and result in anomalous electrokinetic behavior. Recent reports have shown that microfabricated nanoscale systems can be used to sequence DNA, separate and concentrate biomolecules, and act as biological ion channels. This session focuses on theoretical, computational, or experimental studies of natural or engineered systems with nanoscale dimensions that exhibit electrokinetic behavior distinct from their microscale counterparts.



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T3000 DNA Analysis in Microfluidic & 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.



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T3000 Electrokinetic Behavior of Micro 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.



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T3000 Advances in Proteomics: New Technologies

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 responses. 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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Co-Chair: Phil Beckett
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T3000 AES Poster Session: We invite submissions describing new experimental or theoretical work involving any aspect of electrophoresis at both the macro- and the micro-scale. This year awards for the *best student posters*, based on judging by 3 members of the AES council, will be \$100 for First Place and \$50 for Second Place.



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