SUNDAY MORNING

Nanotechnology & Single Cell Analysis in Biology and Medicine: Next Frontier (Oral)
Cosponsored by BIOL, COLL, MPPG and PHYS
X. Xu, Organizer

8:00 . Development of new luminescent and single molecule optical probes for bio-imaging inside by energy conversion application. P. Alivisatos

8:30 . Super Bright Luminescent Ag and Au Nanoparticles for Imaging and Sensing. H. Dai

9:00 . Imaging organelle interactions at super-resolution for almost forever and in multiple colors. A. Schepartz

9:30 . Multifunctional size-dependent drug nanocarriers for probing multidrug membrane transporters of single live cells. X. Xu, P. Songkriasak, P. Cherukuri, F. Ding, T. Huang

10:00 Intermission.


10:40 . Low photodamage label-free imaging of single cell activity aimed at mapping neuronal activity
. M. Didier, O. Tarun, S. Roke

. B.M. Reinhard

11:40 . Full 3D Orientation and Position Determination of Single Anisotropic Nanoparticles with Dual-Focus Dark-Field Microscopy. N. Fang, X. Cheng, K. Chen

Placeholder
Paper Devices for Bioanalysis (Oral)

C. Mace, Organizer
M. R. Lockett, Organizer, Presiding

8:00 Introductory Remarks.


8:35. Molecular technologies for robust detection of proteins in bodily fluids. H.D. Sikes


9:35 Intermission.


10:20. Porous microfluidic sensors for field use. E. Fu

10:50. Issues of the nano-bio interface in paper based immunoassays. K. Hamad-Schifferli


11:50. Single cell detection in raw sample by a piece of membrane. X. Lin, X. HUANG, M.R. Hoffmann

Placeholder

Student Organized Symposia: Supramolecular Analytical Chemistry (Oral)

Cosponsored by YCC
Financially supported by ACS Sensor; College of Arts & Science, and Department of Chemistry and Biochemistry, the University of Alabama; ISS, Inc.
M. Ihde, X. Liang, J. Tropp, Y. Xu, Organizers, Presiding

8:00 Introductory Remarks.

8:10. Auto-inductive cascades and differential sensing: A union of physical organic chemistry and analytical sciences. E.V. Anslyn


9:40 . Photo-Responsive Molecular Baskets Capable of Removing/Releasing Targeted Molecules in Water. **J. Badjic**

10:10 Intermission.

10:20 . Simple sensor arrays for not-so-simple analyses. **P. Anzenbacher**

10:50 . The Hofmeister and Inverse Hofmeister Effects. **B.C. Gibb**


11:50 Concluding Remarks.

Placeholder

**Analytical Technology & Application Innovations in Pharma (Oral)**

E. Jameson, *Organizer, Presiding*
M. Strohmeier, *Presiding*

9:00 Introductory Remarks.

9:05 . Innovation and Novel Applications for Pharmaceutical Analysis . **P. Faustino**

9:25 . Drug quality assurance to combat counterfeit Streptomycin and Rifampicin using facile, low cost colorimetry . **M.R. Foster, S. Williams**

9:40 . Purity analysis of volatile/reactive building block chemicals without UV chromophore by HPLC-charged aerosol detection. **L. Dai**

9:55 . Biomarker quantitation by HILIC LC-MS-MS. **S. Tentarelli**

10:25 Intermission.

10:40. Solid state NMR spectroscopy as an advanced characterization tool for pharmaceutical solids to support regulatory science. A. Mohammad, P. Faustino

10:55. Mid-infrared photothermal imaging of active pharmaceutical ingredients at submicrometer spatial resolution. C. Li, D. Zhang, J. Cheng


11:40 Concluding Remarks.

Placeholder

Technical Developments & Applications of Optical Chemical Imaging (Oral)

Cosponsored by COLL and PHYS
G. Wang, Organizer
N. Fang, Organizer, President

9:00 Introductory Remarks.


9:30. Resolving single protein dynamics at polymer interfaces. C.F. Landes


10:15 Intermission.

10:30. Live-cell bioorthogonal chemical imaging. W. Min


11:40. Development of combinatorial spectro-microscopic system for understanding nanoscale and mesoscale structures and dynamics. **F. Zhao**

Placeholder

**Nanoelectroanalytical Chemistry for Biological & Material Sciences (Oral)**

S. Amemiya, *Organizer, Presiding*
A. Boika, *Presiding*

1:30 Introductory Remarks.


2:10. AC Polarized Microelectrodes as a Novel Tool for Electroanalysis: Collisions and More.. **A. Boika, J.A. Bonezzi, A. Frkonja-Kuczin, Z. Zhao**

2:45. Nanoemulsions for Biomedical/Electrochemical Application: a Comprehensive Study on the Nanostructural Effect. **J. Kim**

3:20 Intermission.


4:10. Studying Acetylcholine Neurotransmission at Single Synapse with NanoElectrodes. **M. Shen**

4:45. Nanoscale Scanning Electrochemical Microscopy for Overcoming Limitations of Microscale Electroanalysis. **S. Amemiya**

**Environmental Behaviors & Health Effects of Pollutants: A Symposium in Honor of Professor Guibin Jiang (Invited) (Oral)**

Sponsored by ENVR, Cosponsored by ANYL and GEOC
Advances in Sensors & Biosensors for Environmental Monitoring (Oral)
Sponsored by ENVR, Cosponsored by ANYL and BIOL

Environmental Nanometrology (Oral)
Sponsored by ENVR, Cosponsored by ANYL and GEOC

SUNDAY AFTERNOON

Placeholder

Nanoelectroanalytical Chemistry for Biological & Material Sciences (Oral)

S. Amemiya, Organizer, Presiding
J. Kim, M. Shen, Presiding

8:00. Electroanalytical evaluation of metal and metal oxide nanoparticles by nano-impact electrochemistry: methodology and analytical applications. E. Andreescu, K. Kirk, F.H. Narouei, A. Karimi


9:40. Enhanced Electron Transfer Mediated by Conjugated Polyelectrolyte and Its Application to Washing-Free DNA Detection. S. Park, H. Woo, H. Yang

10:05 Intermission.

10:15. Core/Shell Nanorods Based Dielectrophoresis for Biomarker Concentration and Detection. J. Fu, Z. Cao, Y. Zhu

10:40. Development of nanostructural biochips for various types of cancer marker determination. F. Ko

11:05. Detection and discrimination of isomeric volatile organics on the surface of zinc ferrite chemi-resistor. K. Mukherjee, M. Zaghloul

11:55 Concluding Remarks.

Placeholder

Nanotechnology & Single Cell Analysis in Biology and Medicine: Next Frontier (Oral)

Cosponsored by BIOL, COLL, MPPG and PHYS
X. Xu, Organizer


2:00 .
Highly multiplexed and high-throughput analysis of single cells
. D.T. Chiu


3:20 Intermission.

3:30 . Microengineered tools for advancing preclinical and clinical research. N.L. Allbritton

4:00 . Dynamic Profiling of Anti-tumor Immune Response at the Single-Cell Resolution by Droplet Microfluidic Cell Pairing. T. Konry

4:30 . Transient absorption microscopy for single cell analysis: seeing chromophores that do not fluorescence. J. Cheng

5:00 . Multiplex single-cell detection of cytokines by barcoded microarray method. M. Abdullah, J. Wang

Placeholder

Paper Devices for Bioanalysis (Oral)

M. R. Lockett, Organizer
C. Mace, Organizer, Presiding
1:30 Introductory Remarks.

1:35 Innovating Beyond the Test Strip for Paper Diagnostics. A.A. Kumar

2:05 Paper-based cultures to screen for drug resistance and hormone sensitivity. M.R. Lockett

2:35 Merging Electronic Bacteria with Paper. S. Choi

3:05 Intermission.


4:20 Electrochemical quantification of potassium on paper-based devices. D. Wilkins, I.A. Taylor, F. Deiss


Placeholder

Student Organized Symposia: Preparative Mass Spectrometry: Recent Advances & Applications (Oral)

Cosponsored by YCC
P. Su, Organizer, Presiding
H. Hu, Presiding

1:30 Model cluster catalysis and electrocatalysis by size-selected cluster deposition. T.J. Gorey, A.C. Cass, G. Li, E.T. Baxter, S.L. Anderson


2:30 Preparation of model nanocatalysts using size-selected cluster deposition. M.G. White, M. Xue, K. Goodman, Y. Ma, J. Wang
3:00. Dynamics of protonated dialanine adsorption on and desorption from a F-SAM surface. 
W.L. Hase


Placeholder

**Student Organized Symposia: Supramolecular Analytical Chemistry (Oral)**

Cosponsored by YCC
Financially supported by ACS Sensor; College of Arts & Science, and Department of Chemistry and Biochemistry, the University of Alabama; ISS, Inc.
M. Ihde, X. Liang, J. Tropp, Y. Xu, *Organizers, Presiding*

1:30 Introductory Remarks.


2:05. Investigation into the mechanochemical properties of single artificial molecular switches by AFM. D. Sluysmans, S. Hubert, F. Devaux, C.J. Bruns, Z. Zhu, A. Duwez, J.F. Stoddart

2:25. Improving affinity and solubility of supramolecular receptors in aqueous media using dendritic scaffolds. M. Bonizzoni

2:55. Supramolecular Approaches to Targeting, Sensing, and Treating Solid Tumors. J.L. Sessler

3:25 Intermission.

3:35. Sensing fluoride and cyanide anions in water using cationic main group Lewis acids. F.P. Gabbai

4:05. Confinement of Water Pentamers within the Crystals of a Reduced Cyclotribenzoin. M.A. Alrayyani, X. Wang, O. Miljanic

4:25. Construction of an Autonomously Concatenated Hybridization Chain Reaction for Signal Amplification and Intracellular Imaging. J. Wei, F. Wang

4:45. Supramolecular Chemistry of Interfaces: Dynamic Droplet Sensors. T.M. Swager
5:25 Concluding Remarks.

Placeholder

**Technical Developments & Applications of Optical Chemical Imaging (Oral)**

Cosponsored by COLL and PHYS
N. Fang, Organizer
G. Wang, Organizer, Presiding

1:30. Single-molecule imaging of nanocatalytic dynamics. P. Chen

1:55. Single-Molecule Imaging in Catalytic Polymerization. S. Blum


3:20 Intermission.

3:35. Quantitative Single-Molecule and Single Particle Study of Catalytic Reaction Kinetics in Versatile Nanoconfinement under Operando Condition. B. DONG, N. Fang, Y. Pei, W. Huang

4:00. Revealing the effect of quantum size confinement on nanocatalysis at single cluster level. W. Xu


**Environmental Nanometrology (Oral)**

Sponsored by ENVR, Cosponsored by ANYL and GEOC

**Environmental Behaviors & Health Effects of Pollutants: A Symposium in Honor of Professor Guibin Jiang (Invited) (Oral)**

Sponsored by ENVR, Cosponsored by ANYL and GEOC

**Legacy & Emerging Organic Contaminants in the Great Lakes, Seas & Oceans (Oral)**

Sponsored by ENVR, Cosponsored by ANYL and GEOC
Structures & Functions of Glycans (Oral)

Sponsored by CARB, Cosponsored by ANYL, BIOL, CELL, MEDI and ORGN

Advances in Sensors & Biosensors for Environmental Monitoring (Oral)

Sponsored by ENVR, Cosponsored by ANYL and BIOL

SUNDAY EVENING

Placeholder

Analytical Division Poster Session (Poster)

L. A. Baker, Organizer

7:00 - 9:00

. Novel signal amplifiable mercury detection method based on DNA conjugated upconversion nanoparticles.
  . A. Nanattuchirayil Vijayan, P. Zhang

. Characterization of the non-covalent interactions between poly (styrene sulfonate) and peptides using multistage tandem mass spectrometry. B. Wei, S. Gerislioglu, M. Atakay, B. Salih, C. Wesdemiotis

. A disposable label-free amperometric immunosensor based on poly (vinyl alcohol-co-ethylene) nanofibers for detecting residual antibiotics in foods. A. El-Moghazy, C. Zhao, Y. Si, N. Amaly, G. Sun


. Developing tools for high resolution mass spectrometry-based screening via the EPA’s CompTox Chemistry Dashboard. A. McEachran, K. Mansouri, H. Al-Ghoul, C. Grulke, J. Sobus, A.J. Williams

. Synthesis And Characterization of Pyridine Carboxaldehydes Schiff Bases And Derivatives And Their Applications As Chemical sensors. M.K. Hussein, Y.M. Hijji

. On-line detection of Ag nanoparticles released from household water purification filters by electrodialyzer-single particle ICP-MS. F. Lin, C. Chang, L. Yi-hung, I. Hsu

. CONSTRUCTION OF LOW-COST BIAMPEROMETRY MICROSCALE EQUIPMENT WITH LOCAL MATERIALS FOR KARL FISCHER WATER TITRATION. F.J. Olvera-Garcia, A.d. García Mendoza, A. De Santiago-Zárate, A. Baeza Reyes


. Immuno-capture laser ionization mass spectrometry: Gold and silver nanoparticles as mass tags for high mass protein imaging. Y. Cheng, T. Tam, S. Chau, S. Lai, K. Ng

. Comparison of Stirbar Sorptive and Liquid Extraction Techniques via Volatile Analysis of Blood Orange Fruit Pulp. B. Gates, A. Tucker, R. Weiland

. Identification of the decarboxylated analog of Pigment Red 57 and its quantification in the color additives D&C Red Nos. 6 and 7 using UHPLC. M. Perez-Gonzalez, C.D. Ridge, A. Weisz

. Preparation of a new graphene based biosensor modified with nanoparticles and nafion for the detection of glucose. D. AKIN

. Hydrazine functionalized probes for chromogenic and fluorescent ratiometric sensing of pH and F through experimental and theoretical studies. A. Roy Chowdhury, P. Banerjee


. Synthesis, optimization, and bioconjugation of electrochemically synthesized magnetic nanoparticles to induce irreversible damage to Glioblastoma invasive rim cells. M.A. Tovar, L.C. Giancarlo


. Absolute quantitation of cardiolipin, phosphatidylglycerol, and lysyl-phosphatidylglycerol using HILIC based separation coupled to a Q Exactive Plus mass spectrometer. E.D. Tague, J. Harp, B. Woodall, E. Fozo, S.R. Campagna
. Controllable design of polycrystalline synergistic electrochemical biosensors for antineoplastic drug in mammalian cells. [h. zhou, J. Masson, q. song]

. Electrochemical sensor for sensitive and selective detection of liver cancer cells based on folic acid and octadecylamine functionalized graphene aerogel. [r. li]


. Detection and characterization of dopamine dynamically using Electrochemical Impedance Spectroscopy. [J. Reyes Morales, N.M. Rivera Serrano, C. Fuster, L. Cunci]

. Protein adsorption on nanoscale diblock copolymer surfaces. [A. Misiura, N. Moringo, C. Dutta, H. Shen, C.F. Landes]

. Structural analysis and potential applications of non-anticoagulant heparin. [Y. Ouyang, R.J. Linhardt, F. Zhang]


. Optimizing subsecond guanosine detection using fast-scan cyclic voltammetry. [M.T. Cryan, A.E. Ross]

. Effect of relative humidity on the phase and chemical properties of cis-3-hexenyl acetate derived secondary organic aerosol. [K.B. Fischer, G. Petrucci]

. Fast determination of β-cyclodextrin-Guest binding constants by fluorescence spectroscopy approach. [x. zhou]


. Melanin extraction and concentration analysis from Dumetella carolinensis feathers. [J. Esposito, W.B. Hammert, R. Smith, M. Hatch, K.A. Stumpo]
. Esterification of phosphonic acids in organic matrices for their enhanced detection by EI-GC-MS.
  C.A. Valdez, R.N. Leif

. Methylation of phosphonic acids related to nerve agents and their subsequent analysis by EI-GC-MS and GC-FPD.
  C.A. Valdez, R.N. Leif, S. Hok, A. Alcaraz

. Highly sensitive, colorimetric, paper-based devices for the detection of nitrate in marine ocean environments. T. Mako, J. Racicot, M. Levine

. Cobalt oxide multiwalled carbon nanotube composites for dopamine sensing. M. Kader, C. Chusuei

. Colorimetric BRCA1 detection based on a 3D DNA nanostructured reporter probe. Y. Wen, Y. Li, L. Li, X. Yang, L. Wang, W. Liang, M. Ding, G. Liu

. Modification of cellulose with cyclodextrin derivatives for solid state detection of toxicants. J. Racicot, T. Mako, M. Levine

. Construction and characterization of solid-state sensors based on tungsten oxides used for the determination of acidity in dairy samples.
  D.V. Gutiérrez Núñez, A.d. García Mendoza, J.C. Aguilar, A. Baeza Reyes

. Surface-enhanced Raman detection of glucose on different substrates for biosensing applications
  L. Alqarni

. Chemiluminescent aptasensor capable of rapidly sensing prostate-specific antigen in human serum using a dual-aptamer and paramagnetic bead. K. Kim, M. Kim, P. Park, J. Lee


. Simultaneous analysis of sugar components in $^{18}$F-FDG injection as their PMP derivatives by high performance liquid chromatography on a UV detector
  R.N. Nair, A. Lebedev

. Double chemiluminescence enzyme immunoassays capable of simultaneously quantifying CA 19-9 and CEA in a sample. Y. Lee, H. Moon, J. Lee

. Electrochemiluminescence DNA biosensor for Hg(II) based on the catalysis of MoS$_2$-Au-hemin nanocomposites and the signal amplification of luminol. T. Kang
Chemiluminescent Biosensor for the Early Diagnosis of Prostate Cancer Utilizing Two Distinct Biomarkers. J. Chong, J. Lee

Positive feedback and theory in Hot-Tip Scanning Electrochemical Microscopy. Z. Zhao, A. Boika

Investigations in Magnesium Battery Technology. B. Basanty, S. Cora, N. Sa

Control Membrane Fouling In Membrane Distillation. M. Humoud

Instrumental Analysis of Methyl Salicylate, Both Commercially and Experimentally Derived. M. Pizana, H. Price, J.R. Cole

Enhanced Detection of Lead and Arsenic using Electrokinetic Techniques Coupled with Stripping Voltammetry. J.A. Bonezzi, A. Hohenshil, A. Boika

Targeted metabolomics reveals altered fatty acid metabolism in the host by Huanglongbing disease. J. Suh, Y. Niu, Z. Wang, F. Gmitter, Y. Wang

Analysis and identification of ppb levels of VOC’s in ambient air via GC-PID-FID. J.N. Driscoll, J.L. Maclachlan

Determination of benzocaine concentrations in aqueous solutions using carbon screen-printed electrodes and cyclic voltammetry. D.E. Martyn, S.K. Buehler

Distributed Pharmaceutical Analysis Laboratory (DPAL): Metformin analyzed via HPLC. M. Alamgir, B. Boleslav, R.E. Goacher

Density, conductivity, and viscosity of 1-ethyl-3-methylimidazolium methylphosphonate ionic liquid and the effect of adding molecular liquids. M. Thakurathi, V. Thalangamaarachchige, E.L. Quitevis

Detection and characterization of ZnO nanoparticles in seawater using SP-ICPMS coupled with electrodialyzer. I. Hsu, Y. Liu, F. Lin

Establishing baseline sensitivity data using LCMS/MS to investigate dermal in-vitro absorption toxicological application: Applications in analytical chemistry. A.H. Patel, P. Trivedi, N.A. Khan

Electrochemical sensor for diethylstilbestrol based on magnetic imprinted nanoparticles. T. Kang

Photocatalytic water-splitting BiVO₄ incorporated in various biomass-derived scaffolds. A. Basurrah, D. Nde, W. Zhao
Electrochemical paper-based devices for oral preventative care through pH sensing. A. Metangmo, R. Barron, F. Deiss

Selectivity characterization of five achiral stationary phases using supercritical fluid and hydrophilic interaction chromatography. E.G. Franklin, M. Wilcox, G. Lowden, T. Szczerba


Monitoring the response of epithelial cells to drug molecules with Potentiometric-Scanning Ion Conductance Microscopy. K. Huang, J. Hou, L.A. Baker


Sensor Fusion for Biological Imaging. J. Askim, S. Semancik

Real-time biosensor capable of quantifying triple biomarkers for diagnosing diabetes. E. Park, B. Kim, J. Lee

Manganese oxide nanosheets on quartz crystal microbalance for detection of methylmercaptan gas. Y. Tokura, G. Nakada, Y. Oaki, H. Imai, S. Shiratori

Enhanced detection of methylmercaptan gas using proton containing layered manganese oxide nanosheets coated on quartz crystal microbalance. N. Kawamura, Y. Tokura, G. Nakada, Y. Oaki, H. Imai, S. Shiratori

Conformational behaviour and molecularity of novel anti-IgM G-quadruplex forming aptamers. F. Moccia, D. Musumeci, C. Platella, J. Bradshaw, P. Mallikaratchy, D. Montesarchio

Prediction of Polybrominated Diphenyl Ether Retention Times via Ab Initio Calculations. A. Izydorczak, S. Simpson

Development of a robust capillary electrophoresis methodology for direct quantification of free doxorubicin in liposomal doxorubicin formulations in plasma. M. Mohamed Ansar, T. Mudalige


A Correlated Optical and Electrochemical Approach to Probing Electrocatalysis at Individual Nanostructures. P. Saha, J. Walmsley, J. Hill, C.M. Hill

New sensing scheme based on magnetic relaxation to detect DNA. **R. Nogueira e Silva**, P. Zhang

Analysis of Lipid Binding to Gold Nanoparticle from Lipid Vesicles. **X. Zhang**, C.J. Murphy

SERS Detection of Polycyclic aromatic hydrocarbon compounds through β-cyclodextrin modified Au nanoparticles. **Z. Yu**, H. Sorensen, M. Grasso, P. Zhang

Effects of Nanoparticle Size and Shape on Cellular Uptake: A Single Particle Approach. **J. Hill**

Analysis of ethyl glucuronide in oral fluid using LC-MS/MS and DART-TOFMS with SPME pre-concentration. **K. Romano-Pringle**, J.F. Morrison, C.M. Selavka

Direct analysis by HR-CS GF-AAS. An easy way to fast and accurate results. **M. SCHNEIDER**, H. Cadorim, L. Da Rocha, B. Welz


Noble Metal Nanoparticles-based Protein Microarray. **Y. Cheung**, T. Tam, Y. Cheng, K. Ng

Biphasic-Scanning Ion Conductance Microscopy (BP-SICM)

Using Isotope Substitution to Study High-Temperature Vapor-Phase Chemical Pathways. **D. Weisz**

A rapid and economical analytical method for the quantification of H₂O₂ in industrial treated effluents. **A. Ghauch**, O.N. Tantawi, A. Baalbaki, R. El Asmar

Terahertz multispectral reconstructive imaging of nanomaterials with sub-nanometer resolution. **A. Rahman**

Cellulose nano-composites nanostructure characterized by terahertz reconstructive imaging and spectroscopy. **A. Rahman**, K. Nelson, D. Afzal, M. Parvin
Chemically modified cellulose nano-composites for strong UV reflection and hydrophobicity. **D. Afzal, M. Parvin, A. Rahman**


Self-standing aptamers by an artificial defect-rich matrix. **C. Chen, W. Liao**

Highly sensitive bio-recognition of cancer cells based on biosynthesized nanoclusters. **X. Wang**

Accelerated Stability Assessment Program (ASAP): Using Science to Set Expiry Dating. **K.C. Waterman**

Second Harmonic Generation Microscopy of API Nucleation and Growth. **S. Sarkar, G.J. Simpson**

Cardboard, string, and a hacksaw: Productive no-cost modifications to open-bed autosamplers. **S. Tentarelli**

Dual-emitting Carbon dots-based Nanothermometers. **H. Tantan**

Novel electrochemical microfluidic chip for multicomponent analysis in renal function examination. **Y. Li, J. Liu**

Rapid detection of enzymes, viruses, and bacteria using glucose meters. **A. Das, V. Chivukula, S.S. Iyer**

Determination of Zinc Oxide in Sunscreen Using Ion Chromatography with Visible Absorbance Detection. **H. Yang**

Determination of gentamicin and related impurities in gentamicin sulfate. **J. Hu, J. Rohrer**

Rapid Antimicrobial Susceptibility Test based on Large-volume Light Scattering Microscopy. **M. Mo**

Development of infrared library search prefilters for automotive clear coats from simulated attenuated total reflection spectra. **B.K. Lavine, U. Perera, K. Nishikida**

Structural base analysis of production and purification of Human leukemia Interferon. **Y.S. Ting**

In-situ growth of well-ordered NiFe-MOF-74 on Ni foam by Fe$^{2+}$ induction as an efficient and stable electrocatalyst for water oxidation. **c. xu**
V2O5 Nanosheets as Nanozyme with Peroxidase-Like Activity for Rapid and Sensitive Detection of Glutathione. A. Ganganboina, R. Doong


Non-fouling, encoded hydrogel particles for multiplex microRNA profiling directly from formalin-fixed paraffin embedded tissue. M.B. Nagarajan, A. Tentori, W. Zhang, F. Slack, P.S. Doyle


MONDAY MORNING

Placeholder

Analysis of Materials for Energy Storage (Oral)

Cosponsored by ENFL
N. Sa, Organizer
N. Sa, Presiding

8:00 Introductory Remarks.

8:05 Applications of Environmental TEM in Energy Materials
J. Li

8:35 Aqueous Zinc Batteries
C. Wang, F. Wang, O. Borodin, T. Gao, X. Fan, W. Sun, F. Han, A. Faraone, J. Dura

9:05 Toward Stable Li-O2 Battery Operations using a Water-in-Salt Electrolyte. D. Wang, Q. Dong, Y. Zhao, Y. He
Increased cycling performance of Li-ion batteries by phosphoric acid modified LiNi_{0.5}Mn_{1.5}O_{4} cathodes in the presence of LiBOB. M. Yapa Abeywardana, N. Laszczynski, M. Kuenzel, D. Bresser, S. Passerini, B.L. Lucht

10:00 Intermission.

10:10. In-situ TEM observation on the correlation of electrochemical properties with structural and chemical evolution of electrode materials in rechargeable batteries. C. Wang

10:40. Effect of fluoroethylene carbonate electrolytes on the nanostructure of the solid electrolyte interphase and performance of lithium metal anodes. Z. Brown, S. Jurng, B.L. Lucht

11:10. Interfacial Characterizations on Alumina Coated Cathode Materials for Lithium-ion Batteries. B. Han, B. Key, S.H. Lapidus, J.C. Garcia, H. Iddir, J.T. Vaughey, F. Dogan


Placeholder

Chemical Forensics (Oral)

C. Fraga, Organizer

8:00 Introductory Remarks.

8:05. Analytical chemistry in support of investigations of alleged use. M. Blum

8:25. Sampling for chemical weapons in hostile environments for forensic analysis. L. Phillips

8:45. The role of chemical forensics research in the investigative process. R.L. Bull

9:00. Comparison of targeted and non-targeted approaches in source attribution of sulphur mustard. R. Norlin, K. Höjer Holmgren, D. Wiktelius, A. Larsson, L. Ahlinder, C. Ästot


10:00 Intermission.
Signatures of Sarin Exposure in authentic human Samples
D. Noort, M. van der Schans

Statistical analysis of the chemical attribution signatures of crude sarin. B.P. Mayer, S. Hok, C.A. Valdez, A.M. Williams

Using stable carbon isotope ratios ($\delta^{13}$C) to source the nerve agent precursor methylphosphonic dichloride and its products
J. Moran, C. Fraga, M.K. Nims

Chemical forensics without chromatography: Performance evaluation of attribution models based on vibrational spectroscopy data and a feasibility study on chemical warfare agent attribution using portable instruments. L. Ahlinder, K. Höjer Holmgren, P. Andersson, R. Norlin, A. Larsson, R. Magnusson, C. Åstot, D. Wiktelius

Adsorption and desorption study of a nerve-agent simulant from office materials for forensic applications. C. Fraga, O.M. Primera-Pedrozo, M. Zumbach, A. Breton- Vega, B.P. Wilkins

Placeholder

Nanotechnology & Single Cell Analysis in Biology and Medicine: Next Frontier (Oral)
Cosponsored by BIOL, COLL, MPPG and PHYS
X. Xu, Organizer

Controlling Cellular Architecture and Fate with Nanopatterned Substrates. C.A. Mirkin

Quantifying the cellular uptake and sub-cellular distributions of nanoparticles. Y. Xia

Biomimetic Nanoparticles and Cellular Functions. N. Kotov

Investigation of chemical constituents responsible for PM$_{2.5}$ induced oxidative stress using synthesized carbon black nanoparticles. K. Zhao, L. Guo

Intermission.

Big data from little objects: omics results from nanoparticle/cell systems. C.J. Murphy

11:10 . 3D Single Particle Tracking Discloses Diffusion Modes on Solid Supported Lipid Bilayer. Y. Zhong, G. Wang

11:40 . Detection and characterization of single polymer nanoparticles with surface plasmon resonance imaging microscopy. A. Maley, B. Matthews, R.M. Corn

Nanozymes for Bioanalysis (Oral)

H. Wei, Organizer, Presiding

8:30 Introductory Remarks.

8:35 . Nanozymes: Enzymatic activities, catalytic mechanisms and extensive applications in biomedicine. X. Yan

9:05 . Bioorthogonal chemistry for imaging and therapeutics using engineered nanoparticle ‘nanozymes’. V.M. Rotello

9:35 . Surface modified nanozymes as biosensors. J. Liu

10:00 . Point of Care Bioassay System based on Enzyme-Mimetic Nanomaterials. J. Lee


10:50 . Metal Nanomaterials with Enzymes Like Activities for Quantitation of Small Analytes. H. Chang


11:35 . Metal-Organic Frameworks in Biomimetic Applications. X. Ming, Z. Gu

Wearable & Implantable Sensors (Oral)

M. A. Daniele, L. Deravi, Organizer, Presiding
8:30 Introductory Remarks.

8:35 A Wearable Colorimetric Dosimeter to Prevent UV-induced Skin Damages. J. Wang, A. Jeevarathinam, J.V. Jokerst

8:55 Natural Light-Scattering Nanoparticles enable Visible through Short-wave Infrared Color Modulation. A. Kumar, R.M. Osgood, L. Deravi

9:15 UV/sun exposure monitoring using a wearable sensor made of nanocellulose. E. Morales-Narváez


10:15 Intermission.

10:30 Protein-based Hydrogel as a Material for Actuating a Jointed Scaffold. C.M. Gomes, C. Liu, S.M. Felton, L. Deravi

10:50 A biomimetic coating for intracutaneous sensors and devices. R. Parker, A. Trent, M. VanDyke, T. Zarkovic Grove


Placeholder

Technical Developments & Applications of Optical Chemical Imaging (Oral)

G. Wang, Organizer
N. Fang, Organizer, Presiding

9:00 Monitoring the Interactions of Small Organic Molecules at Lipid Membrane Interfaces. P.S. Cremer

9:25 Spectrally resolved and functional super-resolution microscopy via ultrahigh-throughput single-molecule spectroscopy. K. Xu

9:50 Single-molecule imaging methods to understand the kinetics of three-component DNA-hybridization systems. E.M. Peterson, W. Li, M.W. Manhart, F.D. Morris, J.M. Harris

10:15 Intermission.
10:30  Tracking molecules and nanoparticles to probe confined environments. **D.K. Schwartz**


**Structures & Functions of Glycans (Oral)**
Sponsored by CARB, Cosponsored by ANYL, BIOL, CELL, MEDI and ORGN

**Advances in Sensors & Biosensors for Environmental Monitoring (Oral)**
Sponsored by ENVR, Cosponsored by ANYL and BIOL

**Role of P450s in Broad-Spectrum Multiple Herbicide Resistance in Weeds: Symposium Honoring Stephen Powles (Invited) (Oral)**
Sponsored by AGRO, Cosponsored by AGFD and ANYL

**Environmental Behaviors & Health Effects of Pollutants: A Symposium in Honor of Professor Guibin Jiang (Invited) (Oral)**
Sponsored by ENVR, Cosponsored by ANYL and GEOC

**Environmental Health & Safety of Emerging Chemicals & Technologies (Oral)**
Sponsored by ENVR, Cosponsored by AGRO‡, ANYL and CEI

**Pesticide Spray Drift: Application, Evaluation & Mitigation (Oral)**
Sponsored by AGRO, Cosponsored by ANYL and ENVR

**Fate & Metabolism of Xenobiotics: In Vitro & In Silico Studies (Oral)**
Sponsored by AGRO, Cosponsored by AGFD, ANYL and ENVR

**MONDAY AFTERNOON**

Placeholder
Analysis of Materials for Energy Storage (Oral)

Cosponsored by ENFL
N. Sa, Organizer
N. Sa, Presiding

1:00. Novel Solid State Battery Electrolyte Conductors, Phase Evolution and Processing. J. Rupp


1:55. Decipher electronic and structural evolution of lead-free perovskite using transient X-ray absorption spectroscopy. X. Zhang, C. Liu, k. zheng, D.J. Gosztola, S. Canton

2:20. Simultaneous probing of the copper/electrolyte interface by surface-selective infrared spectroscopy and online electrochemical mass spectrometry. M. Waegele, X. Li, V. Ovalle, C. Gunathunge

2:45 Intermission.

2:55. Surface restructuring-induced catalytic reactivity of transition metal phosphide nanoparticles under electrochemical conditions. H. Wang

3:20. Plasmonic nanowire and graphene for Solar Water Splitting. C. Yang

3:45. Structural Dynamics of Bismuth Cathodes during the Electrochemical Reduction of CO₂ in the Presence of RTILs. J. Rosenthal


4:35. A Raman spectroscopic study of the anatase to rutile phase transition of TiO₂ induced by photoexcitation of adsorbed dyes. D. Graf Stillfried, M.C. Foster

Placeholder

Nanotechnology & Single Cell Analysis in Biology and Medicine: Next Frontier (Oral)
1:00 . Applications of Nanosensors to Understanding Biochemical Signaling Within the Human Body. M. Strano

1:30 . On-a-chip biosensing with optical nano-resonators. r. quidant

2:00 . Biosensing devices-from single cell analysis to organ on a chip. C. Li


3:00 Intermission.

3:10 . Beyond biomarkers: Array-based profiling for diagnostics and geno-/phenotypic screening for precision medicine. V.M. Rotello

3:40 . Intracellular ion monitoring in neurons tracked by modular ratiometric nanosensors. G. Rong, E. Kim, H. Clark

4:00 . Monitoring single cell release of non-redox active gliotransmitters using electrochemical aptamer-based sensors. R.A. Lazenby, R.J. White

4:20 . Ultrabright fluorescent silica nanosensors for dual pH and temperature measurements. S. Peerzade, M. Miljkovic, I. Sokolov

4:40 . Nanopore-based biosensor for lead ion detection using a Cys4 zinc-finger motif. G. M Roozbahani, X. Guan, Y. Zhang

Placeholder

Chemical Forensics (Oral)

C. Fraga, Organizer

1:15 Introductory Remarks.

1:20 . Applications of the US EPA’s CompTox Chemistry Dashboard to support structure identification and chemical forensics using mass spectrometry. A.J. Williams, A. McEachran, J. Sobus, E. Schymanski
1:40. Latest developments and applications of Position-Specific Isotope Analysis by NMR spectrometry. G. Remaud, V. Joubert, S. Akoka, M. Grand, V. Silvestre, B. Charrrier

2:05. Carbon stable isotope ratios from 13C satellite peaks in 1-D 1H NMR spectra. J.R. Cort, S. Colby

2:25. Validation of forensic fire debris data interpretation. M. Sigman

2:45. Establishing the relevance of chemical forensics methods. K. Jarman

3:05 Intermission.


4:00. Authentication of edible food oils using raman spectroscopy. B.K. Lavine, F. Kwofie, I. Uba, M. Bamidele, K.S. Booksh, J. Ottaway


4:40. In-field electrochemical detection of chlorate for explosives assessment. K. Kukoyi, D. Wilkins, F. Deiss

Placeholder

Nanozymes for Bioanalysis (Oral)

H. Wei, Organizer, Presiding

1:30. Nanoenzymes for analytical applications. I. Willner

2:00. Peptide-conjugated gold nanoprobe:intrinsic nanoenzyme-linked immunsorbant assay of integrin expression level on cell membrane. L. Gao, X. Gao


3:45. Nucleotide-dependent tunable peroxidase-like activity of gold nanozymes for bioanalysis. M.V. Yigit, M. Hizir

4:10. Metal Nanocrystals as Peroxidase Mimics for Biosensing Applications. X. Xia

4:35. Nanozymes for in vitro detection and live bioassays. H. Wei

4:45 Concluding Remarks.

Placeholder

Technical Developments & Applications of Optical Chemical Imaging (Oral)

Cosponsored by COLL and PHYS
N. Fang, Organizer
G. Wang, Organizer, Presiding

1:30. Imaging Molecular Conductance at Optical Frequencies in Plasmonic Molecules. B.M. Reinhard

1:55. Measuring the nanometer-scale effects of plasmonic coupling with single-molecule microscopy. J.S. Biteen


2:45 Intermission.

3:00. Nonclassical Optics Enabled Imaging of Single Reactions. D. Han, K. Fu, G. Crouch, S. Kwon, P.W. Bohn

3:25. Developing optical imaging techniques to measure the chemical reaction at single nanoparticle level. X. Shan

4:15 . Three-dimensional mapping of optical near-field responses by controlling probe-sample distance. **H. Wang, X. Xu**

Placeholder

**Wearable & Implantable Sensors (Oral)**

M. A. Daniele, L. Deravi, *Organizers, Presiding*

1:30 . Ultrathin Shell Biosensors for 3D Live Cell Studies

. **W. Xu, Q. Jin, D.H. Gracias**

1:50 . Designer hydrogel ionic circuits for biologically-matched electronics. **S. Zhao, F. Omenetto, D.L. Kaplan**

2:10 . Electroactive protein-based actuators. **L. Deravi**

2:40 . Biodegradable Piezoelectric Force Sensor. **T. Nguyen, E. Curry**

3:10 Intermission.


4:25 . Additive manufacturing of ingestible gastric resident biomedical electronics. **Y. Kong**

Environmental Health & Safety of Emerging Chemicals & Technologies (Oral)

Sponsored by ENVR, Cosponsored by AGRO‡, ANYL and CEI

**Environmental Behaviors & Health Effects of Pollutants: A Symposium in Honor of Professor Guibin Jiang (Invited) (Oral)**

Sponsored by ENVR, Cosponsored by ANYL and GEOC


Sponsored by AGRO, Cosponsored by AGFD, ANYL and ENVR
Microplastic Pollution: Sources, Sinks, & Solutions (Oral)

Sponsored by ENVR, Cosponsored by ANYL and CEI

Role of P450s in Broad-Spectrum Multiple Herbicide Resistance in Weeds: Symposium Honoring Stephen Powles (Invited)(Oral)

Sponsored by AGRO, Cosponsored by AGFD and ANYL

Structures & Functions of Glycans (Oral)

Sponsored by CARB, Cosponsored by ANYL, BIOL, CELL, MEDI and ORGN

Undergraduate Research Posters: Analytical Chemistry (Poster)

Sponsored by CHED, Cosponsored by ANYL and SOCED

MONDAY EVENING

Placeholder

Sci-Mix

L. A. Baker, M. F. Bush, *Organizers*

8:00 - 10:00

TUESDAY MORNING

Placeholder

Light-Nanomaterial Interactions for Ultrasensitive Electrochemical Sensing & Imaging & Materials Chemistry (Oral)

S. Pan, *Organizer, Presiding*


9:20. Sub-particle photoelectrochemistry. P. Chen

9:50 Intermission.

10:05. Developing nanomaterial-based strategies for creating signal-on and signal-off photoelectrochemical biosensors. L. Soleymani, A. Victorious, S. Saha


11:05. Probing electrocatalytic reactions at individual plasmonic nanostructures: A combined direct electrochemical and optical approach. C.M. Hill, P. Saha, J. Walmsley, J. Hill


Placeholder

Nucleic Acid-Based Sensors (Oral)

K. Chow, M. You, Organizers, Presiding

8:00 Introductory Remarks.

8:05. Quantitative Imaging of Immune Cells. Y. Krishnan

8:40. A DNA nanoscope via auto-cycling proximity recording. P.L. Yin

9:15. DNA nanostructures and nanosensors. W. Tan

9:50 Intermission.
10:05 . Imaging and controlling cellular biology using genetically encoded RNA devices. S. Jaffrey

10:40 . Catalytic DNA biosensors for detecting metal ions. J. Liu

11:15 . Folding- and Dynamics-based Electrochemical Metal Ion Sensors. R.Y. Lai

Placeholder

**Recent Advances in Solid Phase Extraction: Symposium in honor of Patrick D. McDonald (Oral)**

Financially supported by Waters Corporation
T. Walter, Organizer, Presiding

8:00 Introductory Remarks.

8:10 . Harnessing the power of solid phase extraction for peptide bioanalysis. M. Lame

8:30 . Solid Phase Extraction (SPE) in bioanalytical method development for therapeutic peptides. K. Lee

8:50 . Development, validation and application of a cation-exchange, solid-phase extraction for the determination of nanoparticle-released drug concentrations in plasma. C. Holliman, W. Song, J. Tweed, Z. Gu

9:10 . Recent advances in solid phase extraction for biological samples – Fulfilling the promise of SPE. J. Danaceau

9:30 . New Developments in SPME. J.B. Pawliszyn

10:00 Intermission.

10:15 . Effective simplified SPE for modern multi-residue analysis: recent developments for pass-through, dispersive, and retention/elution SPE . M.S. Young, K. Tran


11:25. Porphyrin-based magnetic nanocomposites for efficient extraction of polycyclic aromatic hydrocarbons from water samples. J. Yu, S. Zhu

Placeholder

Wearable & Implantable Sensors (Oral)

M. A. Daniele, L. Deravi, Organizers, Presiding

8:30 Introductory Remarks.


10:15 Intermission.


11:00. Wearable and implantable biosensing technologies based on the direct electron transfer principle. K. Sode, N. Loew, I. Lee, Y. Ito, W. Tsugawa


Placeholder

Structure & Function of 2D Materials (Oral)

Cosponsored by COLL and PHYS
S. A. Claridge, Organizer
S. Claridge, Presiding


9:40 . Chemically Building Atomically Abrupt Interfaces in 2D Materials Transition Metal Dichalcogenides. J. Johns


11:10 . Highly Sensitive and High-speed Imaging of Grain Boundaries in Graphene by Transient Absorption Microscopy. C. Yang

Placeholder

Technical Developments & Applications of Optical Chemical Imaging (Oral)

Cosponsored by COLL and PHYS
N. Fang, Organizer
G. Wang, Organizer, Presiding

9:00 . Photostable optical nanoscopy (PHOTON) for cancer research. X. Xu, P. Songkiatisak, P. Cherukuri


9:50 . Plasmonic nanoparticles for single-cell imaging and in-situ sensing. J. Zhu


10:25 Intermission.

10:40 . Molecular Imaging by Using Environmental Sensitive Flavonoid Dyes: From Protein Binding to Specific Biological Tissue Recognition. Y. Pang

11:30 . Quantitative super-resolution microscopy reveals the architecture of the mammalian glycocalyx and its changes during cancer progression


Novel Treatment Approaches for Emerging Contaminants in Groundwater Systems (Oral)

Sponsored by ENVR, Cosponsored by AGRO†, ANYL and GEOC

Non-Extractable Residue (NER) Bio-Accessibility & Potential Risks (Oral)

Sponsored by AGRO, Cosponsored by ANYL and ENVR

DARPA Make-It Program: Automating Small Molecule Route Design, Optimization & Synthesis (Invited) (Oral)

Flow Synthesis

Sponsored by COMSCI, Cosponsored by ANYL, COMP, MEDI and ORGN

TUESDAY AFTERNOON

Placeholder

Analytical Division Awards (Invited)(Oral)

L. A. Baker, Organizer
K. Phinney, Presiding

1:30 . Will Open Tubular Liquid Chromatography Ever Catch On?. P.K. Dasgupta

2:05 . Electrocatalytic Cascades for Energy Conversion and Electrosynthesis. S.D. Minteer

2:40 . The foundation of molecular medicine: A chemical biology approach. W. Tan

3:15 Intermission.

3:30 . Learning is not a spectator sport: Active learning in analytical chemistry

J.K. Robinson
4:05 . Advancing Analytical Chemistry through Education, Mentoring and Inclusion
. C.K. Larive

4:40 . Accelerated Droplet Chemistry: How and Why?. A. Badu-Tawiah

Placeholder

**Frontiers of Bioanalytical Raman Imaging & Spectroscopy (Oral)**

D. Fu, *Organizer, Presiding*

1:30 Introductory Remarks.

1:35 . Stimulated Raman Cytometry: Unveiling Dynamic Signatures in Single Cells for Precision Diagnosis and Treatment
. J. Cheng


2:35 . Sub-diffraction CARS imaging of Plant cell wall
. A. Singh, D. Freppon, O. Zabotina, J.W. Petrich, E.A. Smith

2:55 . Identifying cancer cells with multifunctional surface-enhanced Raman spectroscopy (SERS) probes. M. Li

3:15 Intermission.

3:45 . Super-multiplex vibrational imaging for biomedicine
. W. Min

4:15 . Linear and nonlinear Raman spectroscopy for taking optical biopsies. M. Schmitt, J. Popp

4:45 . Spectral focusing multiphoton hyperspectral imaging with 5 cm⁻¹ spectral resolution. A. Zeytunyan, T. Baldacchini, R. Zadoyan

5:05 . *In vitro* and *in vivo* neurochemical detection for early-onset neurological disease diagnosis with Raman spectroscopy. B. Sharma

Placeholder

**Light-Nanomaterial Interactions for Ultrasensitive Electrochemical Sensing & Imaging & Materials Chemistry (Oral)**
S. Pan, Organizer, Presiding


2:50 . Enhancing the fluorescence stability of CH3NH3PbI3 films under the blue excitation source. J. Yadav, S. Pan

3:10 Intermission.


3:55 . Single nucleation and crystal growth by in-situ electrochemical sensing and optical imaging. G. Wang, Y. Li, M.M. Kvetny


Placeholder

Nucleic Acid-Based Sensors (Oral)

K. Chow, M. You, Organizers, Presiding

1:30 . High-throughput small-molecule enantiopurity measurement using flow cytometry. Z. Tan, A. Manna, J.M. Heemstra

2:00 . Rapid, Sub-Millisecond Interrogation of Conformation Switching Aptamers. R.J. White, M. Santos-Cancel

2:30 . Quantifying intercellular tensile forces by membrane DNA probes. M. You, B. Zhao

3:30 Intermission.

3:45. Real-time, in-vivo feedback control of plasma drug levels guided by electrochemical, aptamer-based measurements. N. Arroyo

4:10. Visualized aptamer biosensors based on coffee-ring effect. H. Liu

4:35. Signal amplification based on isothermal autonomous nonlinear hybridization chain reactions. F. Wang, J. Wang

5:00. Charge splitters and charge transport junctions based on guanine quadruplexes. R. Sha, L. Xiang, C. Liu, A. Balaeff, Y. Zhang, P. Zhang, Y. Li, D.N. Beratan, N. Tao, N.C. Seeman

Placeholder

Structure & Function of 2D Materials (Oral)

Cosponsored by COLL and PHYS
S. A. Claridge, Organizer
S. Claridge, Presiding


2:00. Standing, Lying, and Sitting: Controlling Surface Wetting and Interactions Between a 2D Material and its Environment Using Bioinspired Noncovalent Ligand Layers. S.A. Claridge

2:30. On the intrinsic electrochemical properties of graphitic materials. H. Liu

3:00. Electrocatalysis on Electronically Transparent yet Physically Impermeable Graphene Electrodes. J. Hui, J. Rodriguez Lopez


4:00. The Antimicrobial Property of 2D Materials. L. Yang

Placeholder
Wearable & Implantable Sensors (Oral)

M. A. Daniele, L. Deravi, *Organizers, Presiding*

1:30. Engineering textile-compatible sensors and signal lines for wearable robotics. **V. Sanchez**, C.J. Walsh

1:50. Vapor Phase Chemistry for Garment-Integrated Electronics. **T.L. Andrew**


2:50 Intermission.

3:05. Chemiresistive Sensors for Low Power Applications. **T.M. Swager**

3:35. A wearable sensor for real-time measurement of the chloride ion concentration in sweat: relevance to health and disease. **P. Searson, D. Choi, G. Kitchen**

4:05. Toward high performance gas sensing in wearable formats. **R.A. Potyrailo**

4:35. Conductive Metal-Organc Frameworks as Sensors and Transducers in Portable Electroanalytical Devices. **K. Mirica**

Chiral Agrochemicals: Analytical Advances & Regulatory Trends (Oral)

Sponsored by AGRO, Cosponsored by AGFD and ANYL

DARPA Make-It Program: Automating Small Molecule Route Design, Optimization & Synthesis (Invited) (Oral)

Reaction Planning & Screening

Sponsored by COMSCI, Cosponsored by ANYL, COMP, MEDI and ORGN

Novel Treatment Approaches for Emerging Contaminants in Groundwater Systems (Oral)

Sponsored by ENVR, Cosponsored by AGRO‡, ANYL and GEOC

WEDNESDAY MORNING

Placeholder
Molecular Interactions of Synthetic Nanoparticles with Membranes (Oral)

Cosponsored by COLL and PHYS
Z. Rosenzweig, Organizer, Presiding

8:00 Introductory Remarks.


8:25. Transient protein interaction with nanoparticle produces persistent conformational changes. K. Kim, X. Zhang, C.J. Murphy, J.A. Pedersen

8:45. Effects of ionic environment on bacterial lipopolysaccharide monolayer structure. A. Rahnamoun, K. Kim, J.A. Pedersen, R. Hernandez

9:05. High-precision non-fluorescent single particle tracking of monosaccharide conjugated gold nanoparticles on membranes. K. Chen, Y. Gu, N. Fang


9:45 Intermission.

10:05. -Omic Analysis of the Impact of Lithium Nickel Manganese Cobalt Oxide (NMC) Nanomaterial on Shewanella oneidensis MR-1. E.E. Carlson


11:15. Experimental platforms to study molecular interactions of synthetic nanomaterials with biological membranes. J.A. Pedersen

Placeholder

Frontiers of Bioanalytical Raman Imaging & Spectroscopy (Oral)

D. Fu, Organizer
J. Cheng, Presiding

8:30. Alkyne-tag Raman imaging for finding small molecules. K. Fujita
9:00. Broadband stimulated Raman scattering spectroscopic imaging. **D. Fu**


10:10 Intermission.

10:40. Raman Microscopy Investigation of Cytochrome c-cardiolipin Interactions to Understand the Mechanism of Cytochrome c-induced Membrane Permeabilization proposed to occur during Apoptosis. **J.P. Kitt, D.A. Bryce, S.D. Minteer, J.M. Harris**


11:20. Ultrahigh affinity radiolabeled Raman probes for combined SERS and PET/SPECT imaging of prostate cancer. **S. Siddhanta, I. Barman**


12:00 Concluding Remarks.

Placeholder

**Nucleic Acid-Based Sensors (Oral)**

K. Chow, M. You, *Organizers, Presiding*


10:10 Intermission.


10:45. Electrochemical DNA sensors based on redox-labeled stem-loop probes in polymeric nanoporous films. Z. Harandizadeh, T. Ito

11:05. Detection of Osmium Tetroxide, 2,2’-Bipyridine-labelled Thrombin and Binding with Aptamers. S.K. Galagedera, G. Flechsig


11:45. Microgel tethering for integrated solid-phase nucleic acid amplification and self-reported detection. F. Teng, Y. Ma, M. Libera

12:05 Concluding Remarks.

Placeholder

Solid-Phase Chemoenzymatic Methods for Analysis of Sialylated Glycans & their Intact Glycopeptides (Oral)

Cosponsored by CARB
Financially supported by Genovis Inc.
S. Yang, Organizer, Presiding
J. F. Cipollo, Presiding

8:30. Characterization of site-specific glycosylation of aggrecan, a 2.5 megadalton hyalectan proteoglycan. J.A. Klein, L. Meng, J. Zaia

9:10. Identification of sialic acid linkages on intact glycopeptides using intactGIG-HILIC. S. Yang

9:25. Enzymatic Strategies for O-glycan Analysis using LC-MS. P. Onigman

10:10 Intermission.

10:30. The comprehensive glycomic characterization of the glycocalyx. C.B. Lebrilla

11:10. Human serum IgG glycosylation as a promising biomarker for cancer diagnosis. S. Ren, Z. Zhang, R. Qin, W. Qin, J. Han, J. Gu

11:30. Exploring receptor tyrosine kinase N-glycosylation and signaling via nanoLC-MS/MS using higher-energy collisional dissociation and stepped collision energy. K.B. Chandler, D.R. Leon, J. Kuang, M.A. Kukuruzinska, N. Rahimi, C.E. Costello


Placeholder

**Student Organized Symposia: New Paradigms in Nanoscale Electro catalysis (Oral)**

Cosponsored by YCC
G. Jagdale, S. Jeong, N. Siepser, Organizers, Presiding

8:30 Introductory Remarks.

8:35. Catalysts for Efficient Electrochemical Reduction of CO2 to CO or Ethylene/Ethanol. P.J. Kenis

9:00. Mapping the Catalytic Plasticity of Bismuth/ Ionic Liquid Pairings for the Electrochemical Reduction of CO2. A. Atifi, J. Rosenthal


9:50. Electrocatalysis at Nanostructured Ensembles of Ultramicroelectrode Dimensions. C.G. Zoski

10:15 Intermission.


12:05 Concluding Remarks.

Placeholder

**Wearable & Implantable Sensors (Oral)**

M. A. Daniele, L. Deravi, *Organizers, Presiding*

8:30 Introductory Remarks.

8:35. Nanoporous gold-based biosensor for the determination of hydrogen peroxide. J. Narayanan, **G. Slaughter**


9:35. High throughput virtual screening of fullerene sensors: Designing a molecular clamp. J.M. Cox, **S.A. Lopez**


10:35 Intermission.


11:10. Calibration-free approaches to interrogate electrochemical aptamer-based sensors enable ultra-high-precision in-vivo drug monitoring. **N. Arroyo**

From Lab to Tap: Implications of Scaling up Nano-enabled Environmental Technologies (Oral)

Sponsored by ENVR, Cosponsored by ANYL

Analytical Topics for Ag Process Chemistry & Formulations Research (Oral)

Sponsored by AGRO, Cosponsored by AGFD and ANYL

Atmospheric Fate & Transport of Volatilized Agricultural Emissions (Oral)

Sponsored by AGRO, Cosponsored by ANYL and ENVR

WEDNESDAY AFTERNOON

Placeholder

Advances in Electrochemistry (Oral)

L. A. Baker, Organizer
A. E. Ross, Presiding

1:30 Introductory Remarks.


2:00. Simultaneous Topography and Qualitative Surface Charge Mapping with Scanning Ion Conductance Microscopy
   . C. Zhu, L.A. Baker

2:25. Electrochemistry at the three-phase interface. H. Ren, M. Edwards, H.S. White

2:50. Electrosynthesis and characterization of an electrochromic pigment. T. Williams, C. Martin, A. Kumar, L. Deravi


3:40. Detection of melatonin dynamics in the immune system using fast-scan cyclic voltammetry
   . A. Hensley, A. Colley, A.E. Ross
Joint Symposium of the Separation Science Subdivisions (Oral)

G. A. Fugate, K. Phinney, C. Rimmer, Organizers

1:30 Introductory Remarks.


2:15. Ion-selective polymers: analysis of critical variables. S. Alexandratos, X. Zhu

2:35. Performance evaluation of a new portable GC with photoionization detector for on-site real-time monitoring of environmental VOC. P.K. Nam, M. Bose, X. He, H. Shi

2:55. Ultrafast gas chromatographic separation of fatty acid methyl esters in a biodiesel. B.P. Regmi, R. Chan, A. Atta, M. Agah

3:15 Intermission.

3:30. GC/FUV for analysis of ambient (ppb level) greenhouse gases. J.L. Maclachlan, J.N. Driscoll

3:50. Improved Resolution Analysis of Cyclic Siloxanes in Silicone Polymers with OH-Terminated Siloxanes. M.L. Rivard


4:50. Automated liquid extraction surface analysis coupled with capillary electrophoresis for rapid and sensitive detection of pesticides on a fruit surface. S. Jeong. D. Chung
Molecular Interactions of Synthetic Nanoparticles with Membranes (Oral)

Cosponsored by COLL and PHYS
Z. Rosenzweig, Organizer, Presiding


2:05. Making gold nanoparticles look like lipid vesicles and biological impacts thereof. C.J. Murphy

2:40. Quantitative Analysis of Nanoparticle Surfaces. H. Fairbrother, M.J. Gallagher

3:15 Intermission.

3:35. Label-free dynamic imaging of free standing lipid membranes and their hydration. O. Tarun, S. Roke

4:10. Interaction of Complex Oxides with Supported Bilayers and Organisms: Implications for Environmental Impact of Lithium Ion Batteries. R.J. Hamers

4:45. Towards Active Control of Nanoparticle-Hydrogel Composites. C.F. Landes

5:20 Concluding Remarks.

Placeholder

Next Generation Instrumentations & Measurement in Space Exploration (Oral)

S. M. Angel, K. S. Booksh, Organizers, Presiding

1:30. Remote Raman Spectroscopy and LIBS using a Spatial Heterodyne Spectrometer with Fresnel Collection Optics. S.M. Angel

1:55.

Time-resolved remote Raman spectroscopic system for planetary exploration. S. Sharma

2:45 . The International Space Station US National Lab – Exploring Science in the Final Frontier. K. Savin

3:10 Intermission.

3:30 . High impact chemistry: testing an organic detection instrument for an extraterrestrial kinetic penetrator. A.M. Stockton


Placeholder

Student Organized Symposia: New Mass Spectrometry Methods for Polymer Analysis (Oral)

Cosponsored by YCC
Financially supported by Waters Corporation
J. Mao, B. Wei, Organizers
K. J. Endres, J. O'Neill, S. R. Snyder, Organizers, Presiding

1:30 Introductory Remarks.

1:40 . Top-down mass spectrometry of crosslinked functional materials. K.J. Endres, R. Dilla, M. Becker, C. Wesdemiotis


3:00 . Elucidating polymer architecture using mass spectrometry. S.M. Grayson

3:40 Intermission.


4:40 . MS-assisted design of sequence-controlled polymers to improve their sequenceability. L. Charles, J. Lutz

5:20 Discussion.
Student Organized Symposia: Probing Biological Systems with Nonlinear Optics (Oral)

Advances in NLO Imaging

Cosponsored by YCC
R. Tran, Organizer
H. Florian, S. Sarkar, C. Smith, Organizers, Presiding
R. Tran, Presiding

P. Campagnola, K. Campbell, R. Chaudhary, J. Handel

2:00. Lipid Flip-Flop Measured by Sum Frequency Vibrational Spectroscopy. J.C. Conboy

2:30. Stimulated Raman scattering microscopy: chemical imaging for biomedicine. W. Min


3:40 Intermission.


4:20. Chiral vibrational sum frequency generation spectroscopy for probing water superstructures surrounding proteins. E.C. Yan, E. Perets

4:45. Lipid membranes probed label-free with nonlinear light scattering and imaging: Direct probes of surface chemistry. S. Roke


Chiral Agrochemicals: Analytical Advances & Regulatory Trends (Poster)

Sponsored by AGRO, Cosponsored by AGFD and ANYL

Non-Extractable Residue (NER) Bio-Accessibility & Potential Risks (Poster)
Pesticide Spray Drift: Application, Evaluation & Mitigation (Poster)
Sponsored by AGRO, Cosponsored by ANYL and ENVR

Role of P450s in Broad-Spectrum Multiple Herbicide Resistance in Weeds: Symposium Honoring Stephen Powles (Poster)
Sponsored by AGRO, Cosponsored by AGFD and ANYL

Sponsored by AGRO, Cosponsored by AGFD, ANYL and ENVR

Peter Derrick Memorial Symposium: Nanomaterials & Safe Evaluation
Spectroscopy Analysis
Sponsored by ENFL, Cosponsored by ANYL and COLL

Wastewater-Based Epidemiology: Opportunities & Challenges (Oral)
Sponsored by ENVR, Cosponsored by ANYL

From Lab to Tap: Implications of Scaling up Nano-enabled Environmental Technologies (Oral)
Sponsored by ENVR, Cosponsored by ANYL

Atmospheric Fate & Transport of Volatilized Agricultural Emissions (Oral)
Sponsored by AGRO, Cosponsored by ANYL and ENVR

New Analytical Technologies for Pesticide Analysis (Oral)
Sponsored by AGRO, Cosponsored by AGFD, ANYL and ENVR

THURSDAY MORNING

Placeholder

Opportunities in Forensic Proteomics: Applications, Bioinformatics, Admissibility, Quality Standards (Oral)
E. Merkley, Organizer

8:00 Introductory Remarks.

8:10 The need for advances in analytical chemistry to support forensic analysis of biological materials
FBI Laboratory, Scientific Response and Analysis Unit, Robert L. Bull Ph.D.

R.L. Bull

8:25 Statistical foundations for forensic proteomics. K. Jarman, E. Merkley


9:15 Proteomics in the Analysis of Forensic Bone. M. Buckley, N. Procopio, A. Williams, A. Chamberlain

9:40 Forensic body fluid identification by proteomic mass spectrometry. H. Yang, S. Monier, E. Butler, D. Fenyo, D. Siegel

10:05 Intermission.

10:15 Informatics Approaches to Forensic Body Fluid Identification by Proteomic Mass Spectrometry. E. Butler, W. Liu, S. Ma, D. Siegel, D. Fenyo

10:40 Mass Spectrometric Forensic Analysis of Botulinum Neurotoxins. S. Kalb, J. Baudys, J.R. Barr

11:05 NextGen serology: Protein mass spectrometry for the forensic identification human body fluids. P.B. Danielson, H.E. McKiernan, C. Brown, K.M. Legg


11:55 Concluding Remarks.

Placeholder

Advances in Spectroscopy (Oral)
J. M. Harris, Organizer
D. A. Sheen, Presiding


8:50. Photoactivatable BODIPY probe for localization-based super-resolution imaging. C.S. Wijesooriya, J. Peterson, P. Shrestha, A. Winter, E.A. Smith

9:15. Developments of Novel Fluorescent Molecular Probes for the Selective Detection of Neurotransmitters. Y. Suzuki

9:40. Tuning fluorescence on nano-interface through click chemistry for diagnosing Wilson's disease. W. Chen

10:05 Intermission.


11:05. Biosensing based on Porous Gold Nanostructure Substrates with Plasmonic Tunability. W. Qian

11:30. Silk fibroin one dimensional photonic crystals sensor fabrication and application in small molecules detections. M. Guo, J. Yin, S. Li

Placeholder

Advances in Mass Spectrometry (Oral)

M. F. Bush, Organizer
M. Bush, Presiding

8:55. Advanced robotics coupled with a non-chromatographic mass spectrometry platform to address complex matrixes for *in vitro* and *in vivo* biopharmaceutical studies. **J. Zhang, C. Cruz, P. Faustino**


10:10 Intermission.


10:45. Gas-phase photo-crosslinking and tandem mass spectrometry in unraveling the noncovalent bonding within physiologically active molecule complexes. **Y. Liu, S.R. Huang, F. Turecek**

11:10. Active Dimethyl Labeling and Mass Spectrometry for Protein Structure Analysis. **Y. Wu**

11:35. Characterization and quantification of isobaric antisense oligonucleotide impurities by tandem mass spectrometry with ion mobility. **B. Guan, X. Wang, J. Stolee**

Student Organized Symposia: Enabling Spectroscopies for Nanomaterial Applications: Energy Conversion to Therapeutics (Oral)

Cosponsored by YCC
S. Crawford, X. Gan, L. Marbella, *Organizers, Presiding*

8:30 Introductory Remarks.

8:35. Plasmonic Nanoparticles: From Fundamental Optical Properties to Applications. **S. Link**


9:45. Spectroscopic measurements of carrier densities and redox potentials in tunable inorganic frameworks. **A.M. Schimpf**

10:20 Intermission.
10:35. Spatially Resolved Spectroscopies for Semiconductor Nanomaterials. **W.A. Tisdale**

11:10. Monitoring the Aggregation of Silver Nanoparticles Using Particle-Impact Voltammetry Coupled with UV-Vis Spectroscopy. **L. Ezra, J. Hui, K.R. Riley**

11:35. *In situ* Electrochemical Spectroscopies for Studying Electrocatalysis and Batteries: from IR to NMR to Scanning Probe Microscopy. **Y. Tong**


Placeholder

**Advances in Electrochemistry (Oral)**

L. A. Baker, *Organizer*
A. E. Ross, *Presiding*

9:00 Introductory Remarks.

9:05. Use of citric acid to form an artificial SEI on silicon nanoparticles to enhance the performance of lithium-ion battery anodes. **K.K. Chandrasiri**, S. Jurng, B. Subramanian, Parimalam, C. Cuong Nguyen, B. Young, B.L. Lucht, D. Heskett


10:20. Electromembrane extraction as an improved sample preparation platform for endogenous hormones in plant tissues. **J. Suh**, S. Han, Y. Wang

10:45. Use of methanol extracts of *Kalanchoe cretana* and *Landolphia dulcis* for corrosion inhibition of mild steel in 5.0M H$_2$SO$_4$. **T.A. Abii**

11:10. Electrochemical biosensor for the detection of sub-nanomolar levels of environmental pollutants. **A.L. Furst**, M.B. Francis

New Synthetic Tools & Analytical Methods for the Near-IR (Oral)

Cosponsored by ORGN
M. Henary, G. Patonay, Organizers

9:00 . Pre-assembly of Near-infrared Fluorescent Multivalent Molecular Probes for Biological Imaging
. B.D. Smith

9:30 . Targeted Theranostics Featuring Near Infra-red Dyes
. K. Burgess

9:50 . Fluoromodules Consisting of a Promiscuous RNA Aptamer and Red or Blue Fluorogenic Cyanine Dyes: Selection, Characterization and Bioimaging
. B.A. Armitage, X. Tan


Wastewater-Based Epidemiology: Opportunities & Challenges (Oral)

Sponsored by ENVR, Cosponsored by ANYL

Peter Derrick Memorial Symposium: Nanomaterials & Safe Evaluation

Nanomaterials & Safe Evaluation

Sponsored by ENFL, Cosponsored by ANYL and COLL

RNAi & Gene Editing - Utilization for Enhanced Crop Production (Oral)

Sponsored by AGRO, Cosponsored by AGFD and ANYL
THURSDAY AFTERNOON

Placeholder

Advances in Mass Spectrometry (Oral)

M. F. Bush, Organizer
M. Bush, Presiding

1:30. Using mass spectrometry to exploit a single isoleucine/leucine difference in ERK substrate binding sites for activity-based profiling of MAPK signaling. M. Shin, C.E. Franks, K. Hsu

1:55. AuNPs for enhanced ionization and fragmentation of biomolecules using LDI-MS. K.A. Stumpo


3:10 Intermission.


4:35. Application of Mass Spectrometry to analysis of applications of Fokker-Plank equation to the velocity of chemical reactions. M. Fundator

Placeholder

Advances in Spectroscopy (Oral)
J. M. Harris, Organizer  
D. A. Sheen, Presiding

1:30. Super-Resolution Force Spectroscopy. S. Xu


2:45. ATR-FTIR study of bacteria and proteins on the bare and coated ZnSe internal reflection element. H. Li, R. Chen, C. Guo

3:10. Intermission.


3:45. Using principal component analysis to select an appropriate matrix for solid standards in laser-induced breakdown spectroscopy. D. Rusak, C. Hudson, F. Alfifi


4:35. IRMPD spectroscopy of carbohydrates: fundamental questions and application to glycomics. I. Compagnon

Placeholder

Methodologies for Use in Cleaning Validations (Oral)

H. J. Kaiser, Organizer

1:30. Introductory Remarks.


2:25. Rethinking cleaning validation for active pharmaceutical ingredient manufacturing. D. Hadziselimovic

2:55. Intermission.
3:10. Effective cleaning validation of reusable medical devices. **A. Thanavaro**


4:25 Concluding Remarks.

Placeholder

**New Synthetic Tools & Analytical Methods for the Near-IR (Oral)**

Cosponsored by ORGN
M. Henary, G. Patonay, *Organizers*

1:30. Near-IR fluorescent detection of blood analytes using erythrocyte-encapsulated sensors
  . H. Sepasizangabadi, G. Gilyot, N.P. Cooley, **T.E. Glass**

2:00. Nuclear-NIR Multifunctional Contrast Agents for Pancreatic Cancer Imaging. **H. Choi, K. Bao**

  . **R.M. Strongin**

2:40. Near-infrared fluorescent probes for detection of pH in live cells
  . **M. Fang**

3:00. Near Infrared Fluorescent Imaging of Brain Tumor with IR780 Dye Incorporated Phospholipid Nanoparticles. **Q. Xie**

3:20. Fiber optical near infrared spectrometry (FONIRS) for non-invasive monitoring of skin accumulation of systemically injected drug carriers
  . J. Griffin, M. Benchimol, **D. Simberg**

3:40. Genetically encoded near-infrared fluorescent probes for in vivo imaging. **K.D. Piatkevich**


Placeholder

**Student Organized Symposia: Enabling Spectroscopies for Nanomaterial Applications: Energy Conversion to Therapeutics (Oral)**
Cosponsored by YCC
S. Crawford, X. Gan, L. Marbella, Organizers, Presiding

1:30 Introductory Remarks.

1:35 Ultrafast Raman spectroscopic probes of solar cells and plasmonic photocatalysts. **R.R. Frontiera**

2:10 Ultrasensitive "OFF-ON" fluorescence signal strategy for sensing and imaging microRNAs in vitro and in vivo based on oriented gold nanoconjugates. **J. Sun, x. sun**

2:35 Time-resolved Laser Spectroscopy Applied to Nanomaterials: From Quantum Dots to Thin Films. **C. Burda**

3:10 Intermission.


4:00 Active monitoring of cellular uptake, controlled nucleic acid release, and coordinated cellular responses using a gold nanoparticle bio-optical transponder (nano-BOT). **G.F. Strouse**

4:35 Concluding Remarks.