SUNDAY MORNING

Moscone Center
Room 308, South Bldg.

Nano- and Microstructured Materials and Interfaces for Human Health

M. Lockett, A. Ross, Organizers
S. Claridge, Organizer, Presiding

8:00 Introductory Remarks.

8:10 Withdrawn

8:40 Clusters of catalytic nanocompartments support cascade reactions for bio-applications. C.G. Palivan

9:10 Biodegradable, self-assembled Polyphosphoester colloids for $^{31}$P magnetic resonance imaging and theranostics. T. Rheinberger, F.R. Wurm, O. Koshkina

9:30 More than magnetic isolation: Dynabeads as strong Raman reporters for simultaneous capture and identification of targets. M. McDonald, J. Lee, N. Mhlanga, J. Kang, R. Karnik, L. Tadesse

9:50 Intermission.

10:00 Potential of phenylboronic acid-containing framboidal nanoparticles for drug delivery applications. A.J. van der Vlies, U. Hasegawa

10:20 Withdrawn

10:40 Interface molecular environment-dependent metal organic framework morphology growth control. W. Liao, P. Kar
11:10 . Designed colloidal nanoparticle for inhibiting amyloid aggregation. **N.R. Jana**

Moscone Center
Room 310, South Bldg

**Structure, Properties, and Applications of Porous Liquids**

T. M. Nenoff, *Organizer*
J. Rimsza, *Organizer, Presiding*
I. Borne, *Presiding*

8:00 . Porous liquids: From concept to real-world applications. **H. Mahdavi**, M. Hill, B.D. Freeman

8:40 . Withdrawn

9:00 . Thermodynamic driving forces for polymer infiltration of microporous water. **J.J. Calvin**, C. DelRe, D.P. Erdosy, H. Hong, J. Cho, J.A. Mason


9:40 Intermission.


10:40 . Porous liquids for energy-efficient separation processes. **S. James**

11:00 . Porous liquid formation from polymer-grafted Ni$_2$(m-dobdc) for improved H$_2$ storage kinetics. **G. Redwine**, W.A. Braunecker, T. Gennett

Moscone Center
Room 306, South Bldg.

**Surface, Interface and Coating Materials**

**Synthesis and Fabrication**

8:15. Interfacial synthesis of transition metal oxides and sulfides on liquid metals for optically responsive hybrid nanomaterials. **W. Kong**, R. Chai, C. Tabor

8:30. Silver nanoparticle synthesis and ink formulation for additive manufacturing. T. Kirscht, F. Liu, M. Marander, **S. Jiang**

9:10 Intermission.

9:20. Well-defined molecular bottlebrushes: Synthesis and properties as a unimolecular nanoparticle. **Y. Chen**

10:00. Tuning size, morphology, and magnetization of iron oxide nanoparticles by ionic liquids. **E. Cagli**, M.K. Kidder, B. Gurkan

10:15. Functionalization of metal oxide nanoparticles with various ligands: Implications for devices and non-wettable surfaces. C.L. Wright, Y. Cozzens, **J.E. Whitten**

10:30 Intermission.


Moscone Center
Room 305, South Bldg.

**Symposium in Honor of Prof. Nicholas D. Spencer**
8:00 Introductory Remarks.

8:10. From sulfur on Ag(111) to brushes on hydrogels: 45 years of putting things on top of other things. N.D. Spencer

8:55. Understanding mechanically induced processes on surfaces. W.T. Tysoe

9:30. Mechanism of zddp and zdp tribofilm formation. J. Zhang, J. Wong, H.A. Spikes

10:05 Intermission.

10:15. Slippery business: Contact mechanics and frictional behavior of polymeric hydrogels. R. Carpick


Moscone Center
Room 307, South Bldg.

ACS Award in Surface Chemistry 2023 - Symposium in honor of Joachim Sauer

Catalysis and Surfaces

D. Miller, Organizer
M. Delferro, Presiding

8:00. Modular design of advanced catalytic materials using raspberry colloid templating approach. J. Aizenberg

8:30. Understanding carbonyl group hydrogenation over transition metal catalysts in aqueous reaction environments. D. Sahsah, P. Komen, A. Heyden

9:00. Metal on Metal oxides the challenge of interfaces. N. Lopez

9:30. Microkinetic modeling of catalytic reactions to improve catalyst materials. C.T. Campbell
10:00. Vibrational frequencies of CO bound to cerium oxide surfaces: A consistent theoretical description using density functional theory. M. Ganduglia-Pirovano, P. Lustemberg


11:00. Free energy sampling of catalytic processes at operando conditions. G. Piccini


Moscone Center
Room 304, South Bldg.

Nanomaterials

Nanomaterials Synthesis

C. M. Sims, Organizer, Presiding

8:00. Aerosol CA-Ni-Ce nanoparticle cluster for efficient CO\textsubscript{2} utilization via calcium looping-integrated methane dry reforming. Z. Law, D. Tsai


9:20. Atomically precise gold cluster-chemistry with stibine-based ligands. A. Das

9:40. Crucial roles of metal-ligand complex for uniform synthesis of various metal nanoclusters. J. Kim, J. Park

10:00. Towards atomic precision in syntheses and structures of semiconductor nanoclusters. C. Zeng

10:20. Investigating the reaction conditions of CdTe magic-sized clusters. S.A. Mech
10:40. Phase control in the bottom-up synthesis of transition metal (M = Fe, Co, Ni) chalcogenides. J. Espano, J. Macdonald


11:20. Withdrawn


Impact of PFAS on Environment and Health
Sponsored by ENVR, Cosponsored by COLL, GEOC and TOXI

SUNDAY AFTERNOON

Moscone Center
Room 307, South Bldg.

ACS Award in Surface Chemistry 2023 - Symposium in honor of Joachim Sauer

Materials and Characterization

D. Miller, Organizer
M. Neurock, Presiding

2:00. Use of in situ, combined spectroscopies to understand a catalyst. S. Bordiga

2:30. Understanding the role of lattice modes on the interfacial mobility of lithium ions at solid-state electrolyte surfaces. M.W. Zuerch

3:00. Surface action spectroscopy with inert gas messenger atoms. H. Freund

3:30. Accurate free energy of adsorption of ethanol in H-MFI from anharmonic vibrations computed by DFT-MD simulations. D. Galimberti, D. Kumar, J. Sauer

4:30 . σ-functionals applied to molecules and solids. **J.A. Paier, S. Fauser, A. Görling**

5:00 . How computing is changing the world. **A.K. Wilson**

Moscone Center  
Room 305, South Bldg.

**Basic Research in Colloids, Surfactants and Interfaces**

S. Nath, *Presiding*

2:00 . Withdrawn

2:20 . Nanobubbles enhanced microbubbles flotation of fully hydrophylic freshly precipitated iron hydroxide. **M. Colic**

2:40 . Designing negative feedback loops in enzymatic coacervate droplets. **N. Modi, K. Bishop, A. Obermeyer, S. Chen, I. N. A. Adjei**

3:00 . Capturing Bubbles. B. Vandereydt, **S. Nath, J. Lake, T. Joseph, K.K. Varanasi**

3:30 Intermission.

3:50 . Ion specificity in the rheology of cellulose nanofibrils in the presence of salt. **R. Wattana, C.O. Osuji**

4:10 . Withdrawn


4:50 . Multicomponent active diffusion. Y. Chiu, D. Evans, **A.K. Omar**


Moscone Center  
Room 308, South Bldg.

**Nano- and Microstructured Materials and Interfaces for Human Health**
S. Claridge, M. Lockett, *Organizers*
A. Ross, *Organizer, Presiding*

**2:00**. Nano- and micro-structured aptamer-field-effect transistors on stiff and flexible substrates for implantable and wearable biomarker sensing. C. Zhao, **A.M. Andrews**

**2:30**. DNA-based nanostructures as platforms for contrast agents for in vivo MRI analysis. **H. Clark**, K. Ma, M. Perera Gonzalez, C. Flask

**3:00**. DNA origami directed virus capsid polymorphism. **M. Kostiainen**

**3:30**. Bimodal lateral-flow nanoaptasensor for the detection of carcinoembryonic antigen. **M.C. Licuona**, S.A. Alvarez, B.C. Galarreta, Y. Hernandez

**3:50**. Nanoengineered carbon surfaces for improved neurochemical-electrode interfaces. **A.E. Ross**

**4:20** Intermission.

**4:30**. Targeted and controlled delivery of nitric oxide to cancer cells through hyaluronic acid-coated silica nanoparticles. **Q.E. Grayton**, T.T. Phan, M.H. Schoenfisch

**4:50**. DNA aptamer biointerfaces monitor small molecules for human health. A. Stuber, Y. Massoud, J. Hengsteler, **N. Nakatsuka**

**5:20**. Shaping the materials and chemical microenvironment of an intestine-on-chip to create a physiologic system with multiple cell types. **N.L. Allbritton**

Moscone Center
Room 304, South Bldg.

Nanomaterials

Solar-to-Fuel & Nano-enabled Photocatalysis

C. M. Sims, *Organizer, Presiding*

**2:00**. Nanowire photoelectrochemistry. **P. Yang**

**2:30**. Metal oxyhalide intergrowths as durable photocatalysts. **S.E. Skrabalak**
3:00 . Plasmonic nanoparticle electrodes for zero-carbon fuels. P.K. Jain

3:30 . Colloidal atomic layer deposition for the assembly of complex hybrid nanocrystal structures. P.B. Green, O. Segura Uncina, P.P. Albertini, A. Loiudice, R. Buonsanti

3:50 . Synthesis of anisotropic bimetallic nanoparticles and their applications as plasmonic photocatalysts. T. Egan, B. Sharma, G. Chen


5:10 . TiO₂ inverse opal films with enhanced photocatalytic efficiency using a one-step precursor method. O. Thümmler, A. Wollbrink, M. Bäumer, T.M. Gesing


Moscone Center
Room 310, South Bldg

Surface, Interface and Coating Materials

Theory, Simulation and Mechanism Study

Z. Cao, M. Ma, M. Qiao, K. Song, X. Yong, Organizers
S. Jiang, Organizer, Presiding

2:00 . Direct imaging and understanding of structural heterogeneity in polymer-based nanoparticles. Q. Chen

2:40 . Role of surface acid-base character in pyrrole autoxidation. N. Paranamana, J. Cook, M. Young


3:10 Intermission.

4:00. Molecular insights into redox-active polymer interfaces: Solvation and ion valency effects on metal oxyanion selectivity. **R. Candeago**, H. Wang, M. Nguyen, M. Doucet, V. Glezakou, J. Browning, X. Su

4:15. Towards full mechanical description of a composite layer with corrugated interface using QCMD. I. Efimov, **K. Sedransk Campbell**

4:30 Intermission.

4:40. Probing charged particle assembly at curved fluid interfaces via computational modeling and electrospray experiment. **X. Yong**


5:35. Withdrawn

Moscone Center
Room 306, South Bldg.

**Symposium in Honor of Prof. Nicholas D. Spencer**

R. M. Espinosa-Marzal, F. Mangolini, Organizers
J. Batteas, M. Ruths, Organizers, Presiding

2:00. Biotribology of Tumor Invasion. **W.G. Sawyer**


3:45 Intermission.

3:55. Breaching naturally occurring polymers and polymer brushes on the bacterial cell surface. **G.K. Ayappa**


5:25. Surface controls friction in lubricated contacts. J. Cayer-Barrioz

Agrochemical Formulations and Application Technology: Challenges and Innovation
Sponsored by AGRO, Cosponsored by AGFD and COLL

Impact of PFAS on Environment and Health
Sponsored by ENVR, Cosponsored by COLL, GEOC and TOXI

SUNDAY EVENING

Moscone Center
Hall F, South Bldg.

ACS Award in Surface Chemistry 2023 - Symposium in honor of Joachim Sauer

D. Miller, Organizer

7:00. Fabrication of hyper-crosslinked polyamide nanofiltration membranes composed of aliphatic amines and terephthaloyl chloride for saline water desalination. U. Baig, A. Waheed

7:00. Detection of breath acetone via Au-decorated V_2O_5 thin film/Ag nanoparticles. B. Alghamdi, Q. Drmosh, N. Alharbi, M. Aburuzaiyah

7:00. Effects of stoichiometry on the morphology and thermal stability of metal oxide clusters on metal surfaces. J. Wang, L. Shi, y. ma, M.G. White

Moscone Center
Hall F, South Bldg.

Basic Research in Colloids, Surfactants and Interfaces

7:00 . Manipulation of optical properties through temperature-responsive polymer photonic films. Y. Jang, H. Kwon, H. Song, K. Hwang, J. Lee

7:00 . Withdrawn

7:00 . Dye-sensitized microlens active colloids. J. Chen, J. Tang

7:00 . Surfactant adsorption and partitioning drives dewetting of sessile oil droplets in surfactant solution. K. Kim, W. Xue, L.D. Zarzar

7:00 . Withdrawn

7:00 . Gold-silver nanoshell functionalization and stabilization in non-aqueous solvents. J. Magdon, R. Medhi

7:00 . Nanotextured stainless steel for therapeutic protein and nucleic acid delivery. T. Pho, M.A. Janecka, J. Champion

7:00 . Site-specific conjugation of human IgG1 with peptides mediated by microbial transglutaminase (mTG) for adsorption to AuNPs. K. Osei, J.D. Driskell

7:00 . SERS: Based rapid vertical flow immunoassay for enhanced point of care diagnostics. A. Amissah, E. Ebbah, R. Frimpong, J. Kim, J.D. Driskell

7:00 . Photophysical properties of Cy5 in presence of Graphene Oxide (GO) using steady-state and time resolved spectroscopical techniques. N. Moro, D. Kim, R. Nayak

7:00 . Double emulsions (W/O/O) for encapsulation of phase-changing materials. E. Cruz, E. Pentzer, S. Lak

7:00 . Effect of hydroxyl group position on the self-assembly, gelation, and photophysical properties of (hydroxyphenyl)alkanamides as low molecular mass gelators. B. Fisher, J. Miller, A. Mallia

7:00 . Lives of thermal Marangoni bubbles. S. Nath, G. Ricard, P. Jin, A. Bouillant, D. Quéré

7:00 . Anti-fouling property of polyvinylpyrrolidone in contact lens materials. S. An, J. Ahn, S. Lee, M. Choi

7:00 . Investigation of atmospheric moisture effect on the molecular behavior of isocyanate-based primer surface. S. Zhang, L. Hsu, A. Toolis, B. Li, J. Zhou, T. Lin, Z. Chen
Moscone Center
Hall F, South Bldg.

Biomaterials and Biointerfaces

E. S. Andreescu, C. P. Collier, S. Sinha Ray, Organizers

7:00 . Surface modified mesoporous silica nanoparticles for crossing the blood-brain-barrier. P. Chen

7:00 . Designing amphiphilic iron oxide nanoparticles for targeting amyloid protein fibrils. S. Mandal, M. Nguyen, T. Lee

7:00 . Investigation of drug–model cell membrane interactions using Raman spectroscopy. W. Perla, C. Poust, K. Ivanchenko, S. Lee

7:00 . Insights into dietary polyphenol interactions with lipid bilayers: Vibrational spectroscopy. C. Poust, W. Perla, K. Ivanchenko, S. Lee

7:00 . Probing the barrier properties of model membranes: The effects of plant polyphenols. J. Gudyka, J. Ceja Vega, S. Lee

7:00 . Understanding molecular interactions of model lipid bilayers by ATR-FTIR spectroscopic studies. Z. Morocho, K. Ivanchenko, S. Lee

7:00 . Electrical property investigation of model lipid membranes. R. Porteus, S. Lee

7:00 . Thermodynamic studies on phytochemical interactions with lipid membrane. S. Silverberg, C. Clarke, A. Hernandez Gamez, S. Lee

7:00 . Extraction and purification of phospholipids and neutral lipids from natural products using ethanol and vegetable oils. H. Chung, K. Lee, H. Kwon, S. Choe

7:00 . Label-free, hydrogel-based SPR biosensor for the detection of multivalent protein binding. J. Teoh, H. Yang, S. Jeon, E. Park, T. Eom, D. Yoo

7:00 . Designed chemical synthesis of bioresponsive nanoscale hydrogels. T. Eom, J. Teoh, S. Jeon, E. Park, D. Yoo

7:00 . Decoding the relationship between the size of nanoscale hydrogels and the induced SPR response during multivalent protein binding. E. Park, J. Teoh, T. Eom, S. Jeon, D. Yoo

7:00 . Hydrogel-based SPR biosensor for rapid detection of cancer biomarkers IL-2 and IL-2α. S. Jeon, H. Yang, J. Teoh, E. Park, T. Eom, D. Yoo
7:00. Investigations for the interactions of protein molecules with the ordered porous nanostructure substrates. W. Qian

7:00. Sulfobetaine carboxymethyl chitosan-based antibacterial and antithrombotic coating for blood-contacting catheters. D. Lee, S. Park, B. Lee, J. Park, D. Choi

7:00. Assessing the compositional variation of giant unilamellar vesicles via secondary ion mass spectrometry. D.S. Grusky, A. Bhattacharya, S.G. Boxer

7:00. Control of melanin synthesis inside liquid droplets. K. Barriales, S. Kassem, T. Wang, S. Khandaker, A. Jain, R. Ulijn

7:00. Effect of surface chemistry on enzyme adsorption: Acetylcholinesterase immobilized onto gold surfaces. D. Madeksho, J. Correira, L.J. Webb

7:00. Effect of protein nanoparticle interaction on protein corona formation. K. Halder, S. Dasgupta

7:00. Withdrawn


Moscone Center
Hall F, South Bldg.

Biosurfactants

A. Izmitli, A. D. Kanthe, D. Miller, K. J. Stebe, C. J. Tucker, Organizers

7:00. Comparative study between Gramicidin biosurfactant extract obtained from Aneurinibacillus aneurinilyticus CECT 9939 and biosurfactant extract obtained from Lactobacillus pentosus cells. J.M. Cruz, K. Lvova, A. López-Prieto, X. Vecino, B. Pérez-Cid, A.B. Moldes

7:00. Evaluation of the wettability character of a biosurfactant extract obtained from the microbial biomass of corn steep liquor. A.B. Moldes, A. López-Prieto, A. Martínez-Arcos, X. Vecino, J.M. Cruz
7:00. Evaluation of microbial biomass from secondary streams of red wine and starch industries as sources of biosurfactants. J.M. Cruz, X. Vecino, B. Pérez-Cid, A.B. Moldes

7:00. Sequence engineering of surfactants based on an intrinsically disordered protein domain. K.J. Dolph, A.I. Lall, J.M. Gleason, P. Huang, M.B. Francis

7:00. Preparation and characterization of hybrid surfactants based on an intrinsically disordered protein domain. A. Lall, K.J. Dolph, P. Huang, M.B. Francis

7:00. Synthesis and characterization of symmetric aspartic acid-based tripeptide surfactants. R.C. Swonke, A. Garcia, J. Harris, A. Symons, H. Parson, E. Billiot, F.H. Billiot, C. Azad, M.A. Olson

7:00. Synthesis, purification, and characterization of novel bifurcated amino-acid based molecular assemblies. A. Garcia, E. Billiot, F.H. Billiot, R.C. Swonke

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Colloidal Networks

Y. Colon, D. J. Milliron, T. Truskett, Organizers

7:00. Light-driven micro/nanomotors based on conjugated polymers. L. ZHANG

7:00. Electrospinning of PVA/Fe₃O₄ nanocomposite: correlation of rheological properties with nanofiber morphology. N. Keshmiri, H. Hosseini, A. Milani, M. Arjmand


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Fundamental Research in Colloids, Surfaces and Nanomaterials

S. Hunyadi Murph, J. Katsaras, U. Natarajan, Organizers

Dual-propelled asymmetrical yolk-mesoporous shell polydopamine@SiO₂@Ag micromotor for efficient removal of organic pollutants from water. **X. Li**, Y. Luan

Roles of amino acids as effective promoters for methane hydrate formation at room temperature. **P. Rangsunvigit**


Mesoporous 2D semiconductors for photocatalytic applications. **Y. Liu**, T. Hsieh, D. XIAO, K. Ting

Enhancing the surface wettability of polyetheretherketone (PEEK) with vacuum UV photo-oxidation. **G.A. Takacs**, R. Keeley, O. Omar, H. Heineman, M. Abdi, A. Andelija, M. Mehan, S. Gupta


Investigation of nanoparticle supercrystals formation mechanism. **S. Lee**, J. Dey, j. kim, J. Jang, K. Jin, S. Choi


Operating conditions and defect effects on the grating diffraction structural color of self-assembled colloidal spheres. **C. Young**, T. Liu, T.C. Moore, M.J. Solomon, S.C. Glotzer


Study the effect of plasmon excitation on surface versus bulk photoemission of solvated electrons into water. **S. Dutta**, A. Al-Zubeidi, S. Lee, C.F. Landes, S. Link

Peptoid capping ligands for gold nanoparticles. **J. Petersen**, H. Goldberg, A.A. Fuller

Nickel-gold composite electrodes for electrochemical glucose oxidation. **N. Shey**, E. Gillette

Characterization of vertically stratified films produced from binary polymer-particle mixtures. **S. Fernando**, S.R. Bhatia
7:00 . Connecting ligand binding preferences between atomically precise nanoclusters and large nanoparticles. T. Lou, Z. Rhoden, B. Lear

7:00 . Effects of pH on DNA-carbon nanotube optical sensors of small molecule analytes investigated with molecular dynamics simulations. S. Chakraborty, L. Vukovic, A. Krasley, A. Beyene

7:00 . Thermal conductivity of active nanofluids based on different nanomotors under various lights and magnetic fields. Y. Ding, J. Tang


7:00 . Light-mediated nitric oxide release for antibacterial applications. C.R. Johnson, M.H. Schoenfisch

7:00 . Understanding the mechanistic aspects of metal-doped titania catalysts for selective CO2 photoreduction. S. Singh, R. Punia, K. Pant

7:00 . Adaptive surface coatings to control the stability of nanomaterials prone to surface oxidation and metal ion release. A. Nagar, M.R. Mackiewicz

7:00 . Synthesis of thick shelled gold nanorattles containing gold nanobipyramids for surface enhanced Raman scattering. G.B. Cooper, O.W. Vause, T. Hamlett, Y. Bao

7:00 . Synthesis of multi-shelled gold nanorattles containing gold nanobipyramids. O.W. Vause, G.B. Cooper, Y. Bao

7:00 . Rheological investigation of oil-in-water Pickering emulsions stabilized by graphene oxide for 3D printing. E. Erfanian, M. Kamkar

7:00 . Bioconjugation of 4-phenylbutyric acid (4-PBA) to gold nanoparticle. K. Bandyopadhyay, N. Ebrahim, A. Small, A. Nkrumah, Z. Zhang

7:00 . Withdrawn

7:00 . Exploring the effects of surfactant modification on zeolitic imidazolate framework-8 nanocrystals. t. jongert, I. Slowinski, F. Tian

Moscone Center
Hall F, South Bldg.

Mentoring Undergraduate Surface Science Research
A. Baber, L. B. Benz, E. V. Iski, G. Y. Stokes, Organizers

7:00. Developing and characterizing ultrathin croconic acid thin films on gold substrates. E. Larrazabal, J. Uribe, K.R. Cousins, R. Zhang

7:00. Generation of two dimensional arrays of copper nanoparticles on functionalized surfaces. Y. Aljaber, K. Bandyopadhyay

7:00. Stability study of bifunctionalized gold nanoparticles in high ionic strength solutions: An emphasis on biosensor development. A. DeMello, Z. Petrek, T. Ye

Moscone Center
Hall F, South Bldg.

Nano- and Microstructured Materials and Interfaces for Human Health

S. Claridge, M. Lockett, A. Ross, Organizers

7:00. Colloidally stable silica nanoparticles with high molecular antigens on their surface as carrier for an HIV-1 vaccine. C. Barbey, D. Peterhoff, R. Wagner, M. Breunig

7:00. Bio-inspired hierarchical nanostructure tactile sensor for human health monitoring. N. Hoang Minh, K. Kim, D.H. Kang, Y. Yoo, J. Yoon

7:00. Glutathione responsive self-reporting mineralized conductive hydrogel sensor with cancer-selective, controllable stretchability, and adhesiveness. A. kim, K. Roy, S.H. Subba, T. Kim, H. Jo, S. Park

7:00. pH-responsive carbon dot-based controllable conductive hydrogel as pressure-strain sensor for detection of cancer. T. Kim, A. Robby, S.H. Subba, A. kim, H. Jo, S. Park

7:00. Electrochemical and fluorescent-based conductive hydrogel biosensor to monitor acetylcholinesterase activity and inhibition. H. Jo, K. Seul Gi, S.H. Subba, A. kim, T. Kim, S. Park

7:00. ROS-selective electroconductive hydrogel sensor with controlled mechanical and Nir regulated photothermal treatment. S.H. Subba, H. Jo, A. kim, T. Kim, H. Jo, S. Park

7:00. Injectable nanoparticles for co-delivery of polyphenols and regenerative drug: A synergistic Strategy for bone tissue repair. H. HAN, K. Lee

7:00. Self-assembled lipid nanoparticles for enhanced mRNA delivery. H. Kim, M. Chung
7:00 . In vitro wound healing activity of nitric oxide-releasing glycosaminoglycans. S. Picciotti, Q.E. Grayton, M.H. Schoenfisch

7:00 . Nanoscale patterning of functional ligands on glass for equilibrium $K_d$ measurements of multivalent biomolecular interactions. E. Nava, L. Williams, A. Singh, K.A. Nagubandi, J.C. Arango, C.J. Pintro, S. Claridge

7:00 . Detection of metastatic cells in blood by data analysis of surface captured cells. N. Mansur, M. Hasan, Y. Kim, S.M. IQBAL

7:00 . Photothermal attenuation of cancer cell stemness, chemoresistance and migration using CD44 targeted MoS$_2$ nanosheets. J. Liu, S. Smith, C. Wang

7:00 . Interfacial hydration layer engineering of immuno-iron oxide nanoparticles for enhanced specificity in magnetic separation of pathogenic bacteria. D. Kang, Y. Kim, H. Adra, K. sangmin, L. Dahee

7:00 . Tuning the Ce$^{3+}$/Ce$^{4+}$ ratio in multifunctional CeO$_2$ nanozymes for low-cost healthcare applications. S. Sarkar, A. Kulkarni, R. Srivastava

7:00 . Tubular nanoclay as a ‘mothership’ carrier for the selective delivery of antimicrobials. O. Prinz Setter, A. Gilboa, I. Snoyman, G. Shalash, E. Segal

7:00 . Influence of biofunctionalization on dielectrophoretic particle trapping. A. Duarte, C. Thome, W. Shields


7:00 . Thioether-containing polymeric micelles with fine-tuned oxidation sensitivities for cancer-selective drug delivery. U. Hasegawa, A.J. van der Vlies

7:00 . Nitric oxide-releasing liposomes for intracellular M. abscessus infection. S.G. Nagy, M.H. Schoenfisch

Moscone Center
Hall F, South Bldg.

Nanohybrid Materials for Diverse Applications

N. Feliu Torres, A. Mews, W. J. Parak, Organizers
7:00 . Dual stimuli-responsive gadolinium oxide-decorated graphene oxide-based smart fluids. H. Gwon, S. Lee

7:00 . Gold nanoparticles as radiosensitisers in head and neck squamous carcinoma cells. D. Traynor, M. Fabbrizi, S. Rannard, N. Liptrott, J. Parsons, M. Giardiello

7:00 . Clustering superparamagnetic iron oxide nanoparticles and their effect on magnetic particle imaging (MPI) signal generation. E. Ureñilde Horno, D. Gray, R. Batty, J. Leaver, L. O'Brien, M. Giardiello

7:00 . Tuning polymer composition leads to activity-stability tradeoff in enzyme-polymer conjugates. E. BISIRRI, T. Wright, D.K. Schwartz, J. Kaar

7:00 . Development of conductive ink materials for the thermoforming process of in-mold electronics (IME) application. Y. Kim, H. Kim, J. Kim, K. Lee, Y. Kim, B. Ju, M. Oh


7:00 . Near infrared upconversion nanoparticle: Polymer dot nanohybrid materials for antibacterial applications. A. Ikeji, X. Wu, A. Putta

7:00 . Electroconductive silver nanoparticle composite films for sensing ammonia vapor. M.V. Liyanage, G. Chumanov

Moscone Center
Hall F, South Bldg.

Nanomaterials


7:00 . Materials by design: “Molecules” from nanoparticle “atoms”. A. Mathew, D. Hofmann, R. Nagarajan

7:00 . Implant-assisted delivery strategy for safe and efficient transport of nanoformulations into solid tumors. S. Panikkanvalappil
7:00 . Sustainable energy production and decarbonization through nanoparticle-assisted enhanced oil recovery. **Y. Shukla, G. Pandey**, M. Nadezhda


7:00 . Breaking symmetry in the growth of model colloidal nanocrystals. **S. Oaks-Leaf**, D. Limmer

7:00 . Withdrawn

7:00 . Understanding the orientation and binding of N-heterocyclic carbenes on gold surfaces using SERS. **R. Thimes**, A. Santos, G. Kaur, L. Jensen, D. Jenkins, J.P. Camden

7:00 . One-pot synthesis of noble metal nanoparticles mediated by polyhydroxy fullerenes. **Y. Xu**, V. Krishna

7:00 . Cationic polymer coating increases the catalytic activity of gold nanoparticles towards anionic substrates. **N. Langer**

7:00 . Solution properties of monodisperse poly(acrylic acid) particles made by radical precipitation polymerization. **K. Sakurai**

7:00 . Visualizing surface interactions between gold nanoparticles and fluorescent molecules by polarization-resolved optical microscopy. **B.M. Paranzino**, S. Sridhar, K.A. Willets

7:00 . Nanoparticle-protein interactions: impact of protein corona formation on the interfacial and thermoresponsive properties of acrylamide-based nanogels. **F. Traldi**, P. Liu, A. Zarbakhsh, M. Resmini

7:00 . How crystals grow on a surface: Using a QCMD approach with Kelvin-Voigt analysis. **I. Efimov, E. Hadjittofis, K. Sedransk Campbell**

7:00 . Organic functionalization of pristine and defective monolayer graphene to control biofilm growth. **M. UDDIN**, G. Sereda

7:00 . Doping heteroatoms to carbon nanodots: the effects on structure, optoelectronic property, radical scavenging, and oxidative stress in cells. **J. Wei**, M. Azami, Z. Ji, D. Arvapalli, J. Bang

7:00 . Characterization of strain environments in graphene oxide using Raman spectroscopy. **A. Whalen**, N. Sugak, J. Girard, L. Pfefferle

7:00 . Chloride ligands on DNA-stabilized silver nanoclusters. A. Gonzalez Rosell, S. Malola, **R. Guha**, N. Arevalos, M.E. Goulet, M. Matus, E. Haapaniemi, B. Katz, T. Vosch, J. Kondo, H. Hakkinen, S. Copp
7:00 . Withdrawn

7:00 . Effects of single-, dual-, and multi-heteroatom doping on photodynamic antimicrobial activities of carbon dots. S. Sagbas, S. Demirci, M. Sahiner, A. Akcali, N. Sahiner

7:00 . Anisotropic gold nanostar metamaterials. s. feng, B. Povilus, T. Chang, s. yang


7:00 . Developing synthesis of ZnSe/InP/ZnS core-shell-shell quantum dots for paired agent imaging in NIR-I window. A. Patel, A.M. Dennis

7:00 . Esterification reaction-mediated gold nanoparticle monolayer assembly on a silicon substrate. J. Jang, J. Dey, S. Lee, j. kim, s. mun, S. Choi

7:00 . Distance-dependent enhancement of singlet oxygen generation using far-red light and plasmonic silica- and polyelectrolyte-coated gold nanorods. S. Catingan, Z. Amara, A.H. Moores

7:00 . Transfection of unmodified microRNA using gold-silver nanoshells as delivery vehicles. S. Maparathne, S. Rankothgedera, P.H. Gunaratne, T. Lee

7:00 . Surface functionalization of 2D nanolayered transition metal dichalcogenides for tunable electronic and optical properties. Q.M. Tran, T. Lee

7:00 . Polyurethane shape-memory polymers with embedded Au-Ag nanoshells for triggerable structural transformations. R. Islam, T. Lee

7:00 . Tailoring size, shape, and crystallinity of iron oxide nanoparticles for comprehensive study of nano-magnetism and explore their potential applications. M. Nguyen, S. Mandal, M. Fuller, L. Deng, C. Chu, T. Lee

7:00 . Bacterial photothermal ablation using gold-silver nanoshell-modified polydimethylsiloxane films. m. omidiyan, C. Cai, T. Lee

7:00 . Preparation and morphological studies of magnetic iron oxides nanocomposites and its potentials as adsorbents and photocatalysts for organic dyes. P.A. Ajibade, T.B. Mbuyazi

7:00 . BaTiO3/PVDF composites for sensing and energy-harvesting applications. J. Lee, N. Kim, J. Ryou, T. Lee

7:00 . Manganese Desert Rose nanoparticles with Fusionred capping ligands. T.O. Stratton, S. Langlois, N. Goldie, C.F. Monson
7:00. Bimetallic nanoshell-coated ITO for smart windows. **P. Tajalli, R. Medhi, P. Srinoi, Y. Yao, T. Lee**

7:00. Heterogeneous component Au-Pt-Au nanorings with intertwined triple-rings: Synthesis and vibrational characterization of Co with surface-enhanced Raman scattering (SERS). **S. Lee, S. Park**

7:00. Synthesis of green multishell InP quantum dots with thick outer shell using P(DEA)_3 as P precursor. **S. Kim, M. Oh, Y. Kim, J. Kim**

7:00. Quantum dot light emitting diode with a strongly correlated insulator as inorganic hole transport layer. **H. Kim, Y. Kim, Y. Kim, J. Kim, H. Yang, K. Lee, K. Lee, M. Oh**

7:00. Core size-dependent absorption characteristics of highly bright green ternary ZnSeTe quantum dot emitters. **S. Yoon, Y. Kim, Y. Kim, S. Park, Y. Kim, S. Park, J. Kim, H. Yang**

7:00. Green-emissive Ag-In-Ga-S quantum dots as alternatives to InP counterparts. **Y. Kim, Y. Kong, S. Park, H. Kim, D. Jo, G. Park, J. Kim, H. Yang**


7:00. Unveiling 3D reconstruction of Au nanoplate: Geometrical curvature control through simultaneous formation of concave and convex shapes. **J. Kim, S. Park**

7:00. MOF-based architectures towards higher activity oxygen reduction reaction catalysts. **A. Epshteyn, W.A. Maza, B. Greenberg, J.A. Ridenour, H. Ashberry, B. Hudak, O.A. Baturina, B. Feygelson, B. Chaloux**

7:00. Extracting structure-optical property relationships in nanocubes using MATLAB and COMSOL. **V.G. Kyveryga, M. Faris, B. Roman, D.J. Milliron**


7:00. Room temperature synthesis of composite thin films with embedded Cs₂AgIn₀.1Bi₀.9Cl₆ lead-free double perovskite nanocrystals with long term water stability, wide range pH tolerance, and high quantum yield. **S. BAYER, S. Nagl**

7:00. Confined gold nano-octahedra in cubic nanoframe. **M. Oh, S. Park**

7:00. Alkalide-assisted direct electron injection for the noninvasive n-type doping of graphene. **S. Park, C. Lee**
7:00 . Nanogels for drug delivery: Effect of synthetic methodology on the structure and properties of pNIPAm. A. Vdovchenko, M. Freeley, F. Traldi, A. Pierce, R. O'Reilly, M. Resmini

7:00 . Synthesis of anisotropic Au@Pt nanohexapods by selective facet blocking and etching. W. Park, S. Park

7:00 . Tribological properties of spherical polyelectrolyte brushes. Y. Duan, J. Guo, M. Wang, L. Cao, L. Li, X. Guo

7:00 . Role of synthesis conditions in the power-dependent fluorescence intermittency of CuInS$_2$/ZnSeS quantum dots: Injection vs one-pot shelling. H. Kaur, C.D. Heyes

7:00 . Templated assembly of P22 virus-like particles (VLPs) around gold nanoparticles. A. Clark, R. Fukazawa, J. Gutierrez, D. Echeveria, R. Espinoza, S.C. Nguyen, M. Uchida

7:00 . Tuning of optical properties and phase behavior of quantum dot-stabilized blue phase liquid crystals. U.N. Tohgha, E.P. Crenshaw, M. McConney, K. Lee, N.P. Godman

7:00 . Cation exchange and shelling in ternary CuInS$_2$ and quaternary CuIn(Zn)S$_2$ quantum dots: Structural and optical properties. J.C. Morales Orocu, C.D. Heyes

7:00 . Measurement of intracellular viscosity of living cells through Fourier transform surface plasmon resonance (FTSPR). S. Lee, S. Park


7:00 . Near-infrared emitting polymer dots for laser-based imaging applications. K. Mendis, Z. Rosenzweig

7:00 . Probing the electronic properties of plasmonic nanoparticles using terahertz time-domain spectroscopy. J. Luu, M.R. Sher, M.L. Personick

7:00 . Influence of hydroxylation, hydration and doping of TiO$_2$(110) on the adsorption and decomposition of Sarin. A DFT study. Y. Cardona Quintero, R. Nagarajan

7:00 . Determining 3D atomic structure of nanoparticles with graphene liquid-cell TEM: A workflow for 3D reconstruction. K. Dongjun, J. Park
Moscone Center
Hall F, South Bldg.

Nanoscience and Nanotechnology for Defense and Security

R. Nagarajan, Organizer

7:00. Composites of novel one-dimensional titanium dioxide lepidocrocite nanofilaments with common polymeric and elastomeric materials. A. Walter, M. Carey, M. Barsoum

Moscone Center
Hall F, South Bldg.

Surface, Interface and Coating Materials

Z. Cao, S. Jiang, M. Ma, M. Qiao, K. Song, X. Yong, Organizers

7:00. Effect of surface modification of CaCO₃ nanoparticles by a silane coupling agent methyltrimethoxysilane on the stability of foam and emulsion. J. Lee, J. Lee, J. Lim

7:00. Powder surface coating technology using magnetron sputtering. S. Hwang, D. Jung, B. Kim, H. Kim, S. Lim, H. Lee

7:00. Passive film on austenitic stainless steels in organic acid and hydrogen peroxide solution. R. Jung

7:00. Particle size controlled chiral structural color of monodisperse cholesteric liquid crystals particles. J. HE, Y. Takeoka

7:00. Humidity effects on pure and doped perovskite thin films analyzed by Kelvin probe force microscopy. K. Huang, Y. Chang, P. Lin, K. Hsu, D. Beck, S. Hsieh

7:00. Will it stick? Developing non-toxic coatings to prevent biofouling. J. Daddona, W. Chouyyok, T. LeFevre, S. Akins, G. Bonheyo, R.S. Addleman, C. Larimer

7:00. Hydrophobic-barrier-assisted formation of vertically layered metal electrodes within a single sheet of paper for a foldable radio frequency energy harvesting system. I. Oh, E. Park, S. Lim, S. Chang

7:00. Dopamine functionalized graphene oxide as an effective corrosion inhibitor against carbon steel corrosion in oilfield acidizing and sweet corrosive environments. K. Haruna, T.A. Saleh
7:00. Engineering ZIF-8 thin films for corrosion protection of metal surfaces. P. Najmi, M. Arjmand

7:00. Porous SnO2 gas sensor properties fabricated by thermal evaporation equipment. D. Jung, S. Hwang, S. Son, J. Han, H. Lee

7:00. Metal texture color realization technology using metal alloy sputtering. B. Kim, D. Jung, S. Hwang, H. Kim, J. Park, H. Lee

7:00. Density functional theory study on the interaction between organic acid and stainless steel in passivation reaction. J. Kim, H. Lim, W. Koh, S. Oh, R. Jung, H. Kim

7:00. Reversible antifouling bilayers: A green and reusable approach to marine biofouling prevention. J. Kang, K. Lee

7:00. Simple fabrication of o-carboxymethyl chitosan hydrogel-based nanostructure for antimicrobial and antithrombotic surface of blood contacting medical devices. S. Park, D. Lee, J. Shin, S. Lee, J. Jung, D. Choi

7:00. Facile immobilization of Grubbs catalyst on biochar for a greener and reusable heterogenous olefin metathesis catalyst. M. Dale, A. Riahi, B. Berrington, R. LaDouceur

Moscone Center
Hall F, South Bldg.

Surface Chemistry

S. Claridge, A. V. Teplyakov, L. Tribe, X. Zhou, Organizers

7:00. Withdrawn

7:00. Applications of machine learning to predict the surface functionalization of amorphous silica. S.M. Godahewa, W.H. Thompson

7:00. Visualization of fluoride deposits on the surface of bovine enamel after mouthrinse treatment. C. Tester, G.W. Kagel, C. Ketyer, S. Knox, R. Gambogi

7:00. Withdrawn

7:00. Structural study of self-assembled monolayer with both terminal amino and carboxyl groups constructed on TiO$_2$(110) single-crystal surface. **M. Takahari**, T. Goto, S. Yoshimoto, T. Kondo

7:00. Development of carbene-based and thiol-based adsorbates for modifying gold surfaces and gold nanoparticles. **R. Tigrak**, T. Lee


7:00. Functionalization of silicon with tunable bilayered molecular system for subsequent photopatterning and phosphorus-based dopant attachment. **P. Raffaelle**, G.T. Wang, A. Shestopalov

Moscone Center
Hall F, South Bldg.

**Symposium in Honor of Prof. Nicholas D. Spencer**

J. Batteas, R. M. Espinosa-Marzal, F. Mangolini, M. Ruths, **Organizers**

7:00. Leveraging electrostatic interactions of dynamic physical gels for responsive surfaces. **A. Deptula**, R.M. Espinosa-Marzal

7:00. Intrinsic and extrinsic tunability of double network hydrogel lubricity. **M. Lee**, R.M. Espinosa-Marzal

7:00. Structure and potential drug delivery application of polymer/phospholipid hybrid vesicle system. **K. Sun**

7:00. Water in the electrical double layer of ionic liquids on graphene. **Q. Zheng**, Z.A. Goodwin, V. Gopalakrishnan, A.G. Hoane, M. Han, R. Zhang, N. Hawthorne, J. Batteas, A.A. Gewirth, R.M. Espinosa-Marzal

7:00. Effects of temperature on nanoscale friction of calcite. **B. Fu**, R.M. Espinosa-Marzal

7:00. Reliable incorporation of graphene surfaces into the surface forces apparatus. **G. Greenwood**, Y. Lee, S. Nam, R.M. Espinosa-Marzal

MONDAY MORNING

Moscone Center
Room 306, South Bldg.

**Biomaterials and Biointerfaces**

C. P. Collier, S. Sinha Ray, *Organizers*
E. S. Andreescu, *Organizer, Presiding*

8:00 . Withdrawn


9:20 Intermission.


10:30 . Ligand density of nanoconstructs affects receptor dimerization. **Y.L. Wu**


Moscone Center
Room 305, South Bldg.

**Surface, Interface and Coating Materials**

**Dynamics and New Assembly Structures**

Z. Cao, S. Jiang, M. Ma, M. Qiao, K. Song, *Organizers*
X. Yong, *Organizer, Presiding*

8:00. Influence of layer by layer stacking pattern on the properties of two-dimensional covalent organic frameworks. **S. MAITI**


8:30. Controlling anisotropic colloidal interactions and assembly at fluid interfaces with particle roughness and external fields. **P.J. Beltramo**

9:10 Intermission.

9:20. Designing & controlling Assembly of interfacial colloidal materials. **M.A. Bevan**

10:00. Self-assembled monolayers of Alkanethiols on SiO₂. **A. Bhattacharyya**, W. Nawaj, S. Dadashi, B. Simiyu, E. Borguet

10:15. Fast evaporation of water droplets from porous hydrophilic coatings. **W.A. Ducker**

10:30 Intermission.


11:35. Polystyrene (PS) microspheres and silica nanoparticle (SiNP)-assembled polyacrylonitrile (PAN) nanofibrous membrane for highly efficient oil-in-water emulsion separation. **J. Lee**, H. Lee
ACS Award in Surface Chemistry 2023 - Symposium in honor of Joachim Sauer

Catalysis and Surfaces

D. Miller, Organizer  
A. Bhan, Presiding

8:00. Cu-based catalysts for alkane partial oxidation reactions. **U. Olsbye**

8:30. Surface chemistry meets astrochemistry at the interstellar grains. **P. Ugliengo**, A.R. Germain, L. Tinacci, V. Bariosco, c. ceccarelli

9:00. Experimental and theoretical studies adsorption and catalysis on isolated Titanol groups supported on silica. **A.T. Bell**

9:30. Tuning the electrochemical activity of layered metal oxides for high temperature oxygen electrocatalysis: Effect of surface structure and composition. **E. Nikolla**

10:00. Chemical recycling and upcycling of polyolefin waste. **M. Delferro**


11:00. Understanding the impact of confined space for sorption and catalysis. **J.A. Lercher**, R. Zhao, S. Kim, M. Lee, Y. Liu

11:30. Designing selective dilute alloy catalysts. **C.M. Friend**

Nano- and Microstructured Materials and Interfaces for Human Health

S. Claridge, A. Ross, Organizers  
M. Lockett, Organizer, Presiding
8:00. Drop microfluidic technologies for health: in-drop assembly of antioxidant crystals for senescence control and exosome engineering and drop microfluidics-based single virus genomics. R.C. Miller, T. Cowell, H. Kong, **H. Han**

8:30. 3D-printed modular and scalable microfluidics to investigate ECM’s roles in modulating cell metabolome. **C. Chen**, J. Terrell, C. Jones

9:00. Through the looking glass: nano and micro-textured materials to better visualize cells in 3D culture configurations. **M.R. Lockett**


10:00 Intermission.


11:10. Expanding the scope of monolayer interfaces for nucleic acid-based biosensing: N-heterocyclic carbenes on gold. **N. Arroyo Curras**

11:40. Withdrawn

Moscone Center
Room 304, South Bldg.

**Nanomaterials**

**Novel Materials based on Nanoscale Engineering**

R. Nagarajan, *Organizer, Presiding*

8:00. Analyzing the roles of structure, size, shape, and chemical composition in assessing the catalytic activity of anisotropic nanowire motifs. **S.S. Wong**

8:30. Reconfigurable nanoscale materials with prescribed and switchable States. **O. Gang**

9:00. Beyond-moore energy-efficient electronics with 2D vdW materials and devices. **K. Banerjee**
9:30. Engineering non-noble metal nanoparticle arrays for emerging optoelectronics. R.S. Goldman

10:00. Bright, fast, and durable scintillation from quantum shells. B. Diroll, B. Guzelturk, M. Zamkov


11:00. Suppression of Auger recombination in semiconductor quantum shells. M. Zamkov


Moscone Center
Room 310, South Bldg

Symposium in Honor of Prof. Nicholas D. Spencer

J. Batteas, M. Ruths, Organizers
R. M. Espinosa-Marzal, F. Mangolini, Organizers, Presiding

8:00. Role of molecular deformation in shear-activated chemical reactions: Atomistic simulations. A. Martini, F. Bhuiyan, Y. Li, S.H. Kim

8:35. Molecular structure & surface chemistry dependence of shear-activated chemical reactions: Experimental study with cyclic organic molecules. S.H. Kim, Y. Li, F. Bhuiyan, A. Martini


11:25. 2D Ising Model for the Auto Amplification of Enantiomeric Excess on Achiral Surfaces. **A.J. Gellman**

Virtual Only
Virtual Session

**Basic Research in Colloids, Surfactants and Interfaces**

S. Hunyadi Murph, A. Mallia, Z. Niroobakhsh, *Organizers*
U. Natarajan, *Organizer, Presiding*

10:00 Introductory Remarks.

10:05. Medium-controlled aggregative growth as a key step in mesoporous silica and organosilica nanoparticle formation. **I. Zharov**

10:25. Studying the interactions between silicone emulsions and cationic polymers in the presence of surfactants by capillary electrophoresis. **M. Jing**, D. Miller, G. Faux

10:45. Hairy cellulose nanocrystal-enabled scale-resistant water-in-oil Pickering emulsions. **S. Yeh**, A. Sheikhi

11:05. Developing a pH-triggered release mechanism for surfactant-silica nanocomposites. **V. Vigliotta**, C. Vita, A. Carsten, B. Parr, **M. Hurley**

**MONDAY AFTERNOON**

Moscone Center
Room 307, South Bldg.

**ACS Award in Surface Chemistry 2023 - Symposium in honor of Joachim Sauer**

Materials and Characterization
D. Miller, Organizer
L. Gagliardi, Presiding

2:00 . Withdrawn

2:30 . MD simulations with chemical accuracy – alkane reactivity in acidic zeolites. F. Berger, M. Rybicki, J. Sauer

3:00 . Practical and efficient implementation of density functional embedding theory. M. Sierka, M. Sharma

3:30 . Interfacial fluxionality in electrocatalysis: The ever-changing nature of the active site. Z. Zhang, T. Masubuchi, S.L. Anderson, A. Alexandrova

4:00 . Structure sensitive enantioselectivity on surfaces: Tartaric acid on all surfaces vicinal to Cu(100). A.J. Gellman, C. Fernandez-Caban

4:30 . Spin-forbidden processes and molecular magnetism: Theory and applications. A. Krylov

5:00 . MOF water harvesting in Death Valley. W. Song, Z. Zheng, A.H. Alawadhi, O.M. Yaghi

Moscone Center
Room 306, South Bldg.

Biomaterials and Biointerfaces

E. S. Andreescu, S. Sinha Ray, Organizers
C. P. Collier, Organizer, Presiding

2:00 . Intranasal delivery of surface modified protein nanoparticle improved immune responses. T. Pho, J. Champion


3:20 Intermission.


4:10 . Quantifying channel dynamics and permeability for bacterial microcompartment shell proteins through molecular simulation. **S. Raza**, J.V. Vermaas

4:30 . In-situ detection of gold colloid aggregates amyloid formations within the hippocampus of the Alzheimer’s disease rat. **K. Yokoyama**

4:50 . Lipases-mediated destabilization of drug delivery systems. **M.A. Ilies**

Moscone Center
Room 304, South Bldg.

**Structure, Properties, and Applications of Porous Liquids**

T. M. Nenoff, *Organizer*
J. Rimsza, *Organizer, Presiding*
P. K. Thallapally, *Presiding*

2:00 . From porous organic cages to porous liquids: Translating porosity from the solid to liquid state. **R. Greenaway**


3:00 . Solvation structure and CO\(_2\) capture mechanisms in a simulated ZIF-8 based porous liquids. **M. Christian**, M. Hurlock, T.M. Nenoff, J. Rimsza

3:20 Intermission.


4:00 . Solvation effects on the structure and properties of CC13 porous organic cages in porous liquids. **J. Rimsza**, T.M. Nenoff

Expansion and compression of porous organic cages for gas capture. **J. Rimsza, S. Duwal, H. Root**

Moscone Center
Room 305, South Bldg.

**Surface, Interface and Coating Materials**

**Smart and Responsive Material**

S. Jiang, M. Ma, M. Qiao, K. Song, X. Yong, *Organizers*
Z. Cao, *Organizer, Presiding*

**2:00**. Polyacrylamide copolymers for improving protein formulation and preventing biofouling on medical devices. **E.A. Appel**


3:10 Intermission.

**3:20**. Reconfigurable Nanooptics and smart chromogenic sensors enabled by multi-stimuli-responsive shape memory polymers. **P. Jiang**

**4:00**. Stretchable, biocompatible, and self-healable ionogel coated wearable textiles for continuous physiological monitoring. **X. Sun, K. Le, F.K. Ko, F. Jiang**

**4:15**. Micropatterned hydrogel-elastomer hybrids for flexible wet-style superhydrophobic antifogging coatings. **H. Kim, H. Lee**

4:30 Intermission.

**4:40**. Strain-programmable hopping diffusion in hydrogels. **S. Lin**

**5:20**. Bionic smart marine antifouling coating with coumarin reversible chemical bonds. **Z. Tong, Q. Zhang, X. Zhan, Y. Hou, J. Hu**

**5:35**. Exploring the magnetoelectric effect in biopolymer-based nanocomposites with magnetically controlled antimicrobial activity. **J. Moreira**
Moscone Center
Room 310, South Bldg

Symposium in Honor of Prof. Nicholas D. Spencer

R. M. Espinosa-Marzal, F. Mangolini, Organizers
J. Batteas, M. Ruths, Organizers, Presiding

2:00 . Nature of the electrical double layer on suspended graphene electrodes. M. Salmeron

2:35 . About molecular layering in slit pores: a personal historic perspective with some persistent open questions. M. Heuberger


3:50 Intermission.

4:00 . Graft copolymers at surfaces for tuning physicochemical and tribological properties of materials. E. Benetti

4:35 . Programmable biomimetic light-harvesting systems based on strong coupling of dye-functionalised polymer brushes to plasmon modes. G.J. Leggett

5:10 . Journey between rheology and tribology with Nic Spencer as a guide. L. Isa

5:45 Concluding Remarks.

Moscone Center
Room 308, South Bldg.

Nano- and Microstructured Materials and Interfaces for Human Health

M. Lockett, A. Ross, Organizers
S. Claridge, Organizer, Presiding
2:00 . Designing antimicrobial materials by controlling protein-surface interactions at the nano and micro scale. M. Lingenfelder

2:30 . Hypersurface photolithography: Nanoscale control over organic interfaces for biomedical and materials applications. A.B. Braunschweig

3:00 . Designing nanometer-scale chemical and mechanical environments on hydrogel surfaces for regenerative medicine. S. Claridge

3:30 . Understanding vision through lens crystallin proteins. L. Deravi

4:00 Intermission.

4:10 . Glycomimetic Nanomaterials for controlling stem cell fate. K. Godula

4:40 . Ganglioside functionalized, virus mimicking nanoparticles as carriers for antiretrovirals and CAR T cell stimulation. B.M. Reinhard

5:10 . Cyclic peptide - polymer nanotubes as drug delivery vectors. S. Perrier

5:40 . Inkjet printing of nanometer-scale functional patterns on 2D crystalline and amorphous soft materials. J.C. Arango, C.J. Pintro, A. Singh, S. Claridge

Virtual Only
Virtual Session

Basic Research in Colloids, Surfactants and Interfaces


12:00 . Microwave-assisted PEG block copolymer synthesis for fluorine free foams. L. Brown, G.C. Daniels, K. Hinnant, B. Giordano

12:00 . Withdrawn

12:00 . Study on the foam performance of wormlike micelle based on long-chain surfactants. Q. Niu, Q. Lv, Z. Dong

Virtual Only
Virtual Session

**Biomaterials and Biointerfaces**

E. S. Andreescu, C. P. Collier, S. Sinha Ray, *Organizers*

**12:00**. Dendritic self-assembled structures from anticancer pentapeptides. **L. Resina**, K. El Hauadi, T. Esteves, F.C. Ferreira, M.M. Pérez-Madrigal, C. Aleman

**12:00**. Exploring the binding interactions with superoxide dismutase enzyme mutants and newly designed peptide conjugates. **C.N. Phan**, B.G. Goncalves, M.E. Murray, M.A. Biggs, **I.A. Banerjee**

Virtual Only
Virtual Session

**Colloidal Networks**

**Colloidal Networks**

Y. Colon, D. J. Milliron, T. Truskett, *Organizers*

**12:00**. Nano-emulsion hydrogel-based polymeric films for sublingual and buccal drug delivery. **Y. yang**

Virtual Only
Virtual Session

**Fundamental Research in Colloids, Surfaces and Nanomaterials**

S. Hunyadi Murph, J. Katsaras, U. Natarajan, *Organizers*

**12:00**. Synthesis of graphene oxide and its characterization. **R.K. Vishwakarma**

**12:00**. Fibrillation of Human Serum Albumin (HSA) and a study of its interaction with acidic and basic amino acid capped gold nanoparticles. **S. CHAKI**, S. Dasgupta
Virtual Only
Virtual Session

Nano- and Microstructured Materials and Interfaces for Human Health

S. Claridge, M. Lockett, A. Ross, Organizers

12:00. Dual-responsive drug delivery systems: harnessing phase change materials and metal-organic frameworks. P. Lu, W. Wei, M. Wildy, K. Xu

Virtual Only
Virtual Session

Nanomaterials


12:00. Ultrasound-excitable aggregation-induced emission dye for enhanced sonodynamic therapy of tumor. W. Zeng

12:00.

Antimicrobial activity of the green synthesized Advanced core-shell nanoparticles. A. Albeladi, M. Malik, S.A. AlThabaiti

12:00. Facile synthesis of Multimetallic nanomaterials as efficient antimicrobial agents. A. Alshehri, M. Malik, L. Alharbi

12:00. Novel visible light-sensitized nanocomposite PS@PDA-TiO₂: Broadened photocatalytic response region and enhanced photocatalytic performances. X. Zhao, P. Wang, Y. Zhang, Y. Chen, J. Li, J. Ma, Q. Sun


12:00. Solid quantum dot films for improved waveguiding in LSC applications. S. Froggatt

12:00. Exploring the solid-state optical characteristics of size-tunable silicon nanocrystals via high temperature synthesis. G. Spence, D. Pate, Ü. Özgür, I.U. Arachchige
12:00 . High temperature synthesis of Si$_{1-x}$Ge$_x$ nanocrystals with tunable band gaps and compositions. **G. Spence**, D. Pate, Ü. Özgür, I.U. Arachchige

Virtual Only
Virtual Session

**Surface, Interface and Coating Materials**

Z. Cao, S. Jiang, M. Ma, M. Qiao, K. Song, X. Yong, *Organizers*

12:00 . Mechanism of (NH$_4$)$_2$SO$_4$ on the co-electrodeposition of Fe-Co alloys. **Y. Wu**

12:00 . Eco-friendly marine antifouling coating consisting of cellulose nanocrystals with bioinspired micromorphology. **Y. Duan**, J. Wu, W. Qi, R. Su

12:00 . Effect of electrophoresis conditions on nano hydroxyapatite film morphology. **A.N. Kahaduwa**, N. Fernando, D. Jayasundara

Virtual Only
Virtual Session

**Surface Chemistry**

S. Claridge, A. V. Teplyakov, L. Tribe, X. Zhou, *Organizers*

12:00 . Growth of silver on Si(001) by controlling the substrate temperature. **X. Huang**, A. Hoffman, K. Huang


12:00 . How the facet edge controls the overall co oxidation in nanoporous gold: Combined atomistic characterization/DFT study of residual AG distribution and catalytic activity. **P. A**

12:00 . Nitrogen terminated hydrogenated Diamond(111) surfaces studied by density functional theory. **Y. Zheng**, A. Hoffman, K. Huang

12:00 . Theory and simulations of charge regulation of colloidal particles in electrolyte solutions. **A. Bakhshandeh**
12:00. Silica-modified Pt/TiO2 catalysts: strategic modulation of oxide on Pt metal wrapping in SMSI effect. Z. Hou, Y. Zhu, X. Lin

MONDAY EVENING

Moscone Center
Hall F, South Bldg.

COLL Sci-Mix

8:00. Measuring electric fields at the air/water interface using vibrational stark probes. K.D. Judd, S. Parsons, D. Eremin, J. Dawlaty

8:00. Scalable route to monodisperse colloidal Ni_{x}Co_{3-x}S_{4} nanoparticles using amino acids. T. Meyer

8:00. Withdrawn

8:00. Challenges in method development & particle analysis of biomaterials. S. Race, Z. Guo, H. Ning

8:00. Pressure and composition effects on nanoparticle ligand-solvent interactions. S. Salas Sanabria, L. Hanson

8:00. Gold-silver nanoshell functionalization and stabilization in non-aqueous solvents. J. Magdon, R. Medhi

8:00. Double emulsions (W/O/O) for encapsulation of phase-changing materials. E. Cruz, E. Pentzer, S. Lak

8:00. Lives of thermal Marangoni bubbles. S. Nath, G. Ricard, P. Jin, A. Bouillant, D. Quéré

8:00. Designing amphiphilic iron oxide nanoparticles for targeting amyloid protein fibrils. S. Mandal, M. Nguyen, T. Lee

8:00. Control of melanin synthesis inside liquid droplets. K. Barriales, S. Kassem, T. Wang, S. Khandaker, A. Jain, R. Ulijn

8:00. On route to synthesis of hierarchical Y zeolite catalysts with larger mesopores. X. Li, A. Kuperman, A.S. Katz
8:00 . Tuning the parameters of DNA-based nanothermometry to better understand surface-tethered DNA melting. A. Crawford, P.A. Reinhardt, K.A. Willets

8:00 . Influencing the self-assembly of nanocubes through “hard” and “soft” roundness. P.F. Pieters, E. Vargo, Y. Qian, A. Alivisatos, T. Xu

8:00 . Tailoring size, shape, and crystallinity of iron oxide nanoparticles for comprehensive study of nano-magnetism and explore their potential applications. M. Nguyen, S. Mandal, M. Fuller, L. Deng, C. Chu, T. Lee

8:00 . Heterogeneous component Au-Pt-Au nanorings with intertwined triple-rings: Synthesis and vibrational characterization of Co with surface-enhanced Raman scattering (SERS). S. Lee, S. Park

8:00 . Room temperature synthesis of composite thin films with embedded Cs$_2$AgIn$_{0.1}$Bi$_{0.9}$Cl$_6$ lead-free double perovskite nanocrystals with long term water stability, wide range pH tolerance, and high quantum yield. S. BAYER, S. Nagl

8:00 . Cationic polymer coating increases the catalytic activity of gold nanoparticles towards anionic substrates. N. Langer


8:00 . Cation exchange and shelling in ternary CuInS$_2$ and quaternary CuIn(Zn)S$_2$ quantum dots: Structural and optical properties. J.C. Morales Orocu, C.D. Heyes

8:00 . Breaking symmetry in the growth of model colloidal nanocrystals. S. Oaks-Leaf, D. Limmer

8:00 . Exploring the temperature: Dependent hydrogen bonding network in metal organic nanotubes with varying pore wall polarity. T.H. Jahinge, T. Forbes

8:00 . Greasy cations also strongly bind to neutral macromolecules in aqueous solutions. U.E. Ertekin, E. Issever, H. Okur

8:00 . Linker-dependent charge transfer in covalently bound MoS$_2$-zinc phthalocyanine heterojunctions. C. Hemmingsen, C.T. Eckdahl, R. López Arteaga, S. Kim, N. Georgieva, L. Kuo, M.C. Hersam, E.A. Weiss, J.A. Kalow


8:00 . Applications of machine learning to predict the surface functionalization of amorphous silica. S.M. Godahewa, W.H. Thompson

Dual-propelled asymmetrical yolk-mesoporous shell polydopamine@SiO$_2$@Ag micromotor for efficient removal of organic pollutants from water. **X. Li**, Y. Luan


Light-mediated nitric oxide release for antibacterial applications. **C.R. Johnson**, M.H. Schoenfisch

Adaptive surface coatings to control the stability of nanomaterials prone to surface oxidation and metal ion release. **A. Nagar**, M.R. Mackiewicz

Synthesis of thick shelled gold nanorattles containing gold nanobipyramids for surface enhanced Raman scattering. **G.B. Cooper**, O.W. Vause, T. Hamlett, Y. Bao

Towards full mechanical description of a composite layer with corrugated interface using QCMD. **I. Efimov**, K. Sedransk Campbell


Water uptake, corrosion protection and mechanical properties of epoxy composite coatings. **A. S S**, S. Parida

Divalent cation bridging to marine monolayers facilitates polysaccharide interfacial co-adsorption. **K.A. Carter Fenk**, M. Fiamingo, J. Kim, A. Dommer, R.E. Amaro, H.C. Allen

Nanocelluloses research at a primarily undergraduate institution: Insights, challenges and rewards. **R. Sunasee**

Interfaces and catalysis for electrochemical applications. **J. Lattimer**, D.J. Strasser, M. Kastelic, S. Zhong, M. Pupucevski, S.A. McCatty, T. Zhang


Fabrication of robust mof-based hybrid nanofibrous aerogels using vapor phase deposition. **M. Ahmad Ebrahim**, V. Rahmanian, T. Pirzada, S.A. Khan

Near infrared upconversion nanoparticle: Polymer dot nanohybrid materials for antibacterial applications. **A. Ikeji**, X. Wu, **A. Putta**
8:00 . Photocatalytic properties of novel one-dimensional titanium dioxide lepidocrocite nanofilaments. **A. Walter**, G. Schwenk, J. Cope, K. Sudhakar, M. Hassig, A. Mininni, M. Barsoum


8:00 . Molecular simulation of activation reaction mechanisms in MOF-808. **A. Hinkle**, I. Iordanov, M.A. Browe, S. Garibay

8:00 . Building the viscosity of mild surfactant mixtures containing biosurfactants for applications in personal cleansers. **N. Li**, H. Shen, S. Wu, A. Potanin

8:00 . Preparation and characterization of hybrid surfactants based on an intrinsically disordered protein domain. **A. Lall**, K.J. Dolph, P. Huang, M.B. Francis


8:00 . Biodegradable, self-assembled Polyphosphoester colloids for $^{31}$P magnetic resonance imaging and theranostics. **T. Rheinberger**, F.R. Wurm, O. Koshkina

8:00 . Targeted and controlled delivery of nitric oxide to cancer cells through hyaluronic acid-coated silica nanoparticles. **Q.E. Grayton**, T.T. Phan, M.H. Schoenfisch

8:00 . Bimodal lateral-flow nanoaptasensor for the detection of carcinoembryonic antigen. **M.C. Licuona**, S.A. Alvarez, B.C. Galarreta, Y. Hernandez


8:00 . Colloidaly stable silica nanoparticles with high molecular antigens on their surface as carrier for an HIV-1 vaccine. **C. Barbey**, D. Peterhoff, R. Wagner, M. Breunig

8:00 . Influence of biofunctionalization on dielectrophoretic particle trapping. **A. Duarte**, C. Thome, W. Shields

8:00 . Aggregation process of amyloid beta 1-40 coated gold nano-colloids. **K. Yokoyama**

8:00 . Biomimetic, nanotextured water interfaces: A new look at Langmuir films and their facile, tuneable nanopatterning properties. **M.W. Rutland**
8:00 . Elucidating the adhesion-lubrication paradox of articular cartilage. **D. Burris**, J. Benson, A. Moore

8:00 . Leveraging electrostatic interactions of dynamic physical gels for responsive surfaces. **A. Deptula**, R.M. Espinosa-Marzal

8:00 . Reliable incorporation of graphene surfaces into the surface forces apparatus. **G. Greenwood**, Y. Lee, S. Nam, R.M. Espinosa-Marzal

8:00 . Effects of temperature on nanoscale friction of calcite. **B. Fu**, R.M. Espinosa-Marzal

8:00 . Solvent-MOF interactions in type 3 porous liquids: Effect on pore accessibility and CO₂ adsorption. **M. Hurlock**, M. Christian, J. Rimsza, T.M. Nenoff

8:00 . Thermodynamic evidence for type II porous liquids. **I. Borne**, K. Saigal, C.W. Jones, R.P. Lively

Virtual Only
Virtual Session

**COLL Sci-Mix**


8:00 . Conformational stability of bovine serum albumin as a result of interactions with gold surface. **B. Jachimska**, P. Komorek, M. Szota, K. Rakowski

8:00 . Responsive nanoporous materials from “hairy” nanoparticles. **I. Zharov**

8:00 . Withdrawn

8:00 . Silica-modified Pt/TiO2 catalysts: strategic modulation of oxide on Pt metal wrapping in SMSI effect. **Z. Hou**, Y. Zhu, **X. Lin**

8:00 . Theory and simulations of charge regulation of colloidal particles in electrolyte solutions. **A. Bakhshandeh**

8:00 . Percolation in networks of liquid diodes. C. Sammartino, Y. Shokef, **B. Pinchasik**
8:00 . Antibacterial waterborne polyurethane/calixarene-stabilized silver nanocomposite coatings. A. Mohammadi, M. Eslamiyeh, S. Beigi-Boroujeni

8:00 . Effect of electrophoresis conditions on nano hydroxyapatite film morphology. A.N. Kahaduwa, N. Fernando, D. Jayasundara

8:00 . Dual-responsive drug delivery systems: harnessing phase change materials and metal-organic frameworks. P. Lu, W. Wei, M. Wildy, K. Xu

TUESDAY MORNING

Moscone Center
Room 307, South Bldg.

Basic Research in Colloids, Surfactants and Interfaces

Y. Lapitsky, Presiding

8:00 . Responsive nanocarriers: Delivery platform for oil-water and oil-solid interfaces. A. Alsmaeil, M. Hammami, A. Enotiadis, M. Kanj, E.P. Giannelis


9:40 Intermission.

10:00 . Complex electrokinetic particle trajectories enabled by intricate metallic patches. K.M. Kreienbrink, C.W. Shields IV


10:50 . Calcium sulfate nucleation at the oil-water interface. Y. Wang, Y. Zhu, Y. Jun

11:30 . Magnetic field and chirality to control spin polarization in materials and its impact on oxygen evolution reaction.  S. Sreenivasan

Moscone Center
Room 308, South Bldg.

Biosurfactants

Pharma & Other

A. Izmitli, D. Miller, K. J. Stebe, C. J. Tucker, Organizers  
A. D. Kanthe, Organizer, Presiding

8:00 . Knowledge-driven approach to surfactant selection & optimization for biologic formulations.  A.D. Kanthe, M. Barros, J. Valente

8:30 . Withdrawn

9:00 . Lipid nanoparticles for overcoming biological barriers to RNA delivery.  M.J. Mitchell

9:30 . Structure of polymer-capped gold nanorods binding to model phospholipid monolayers.  B. Lin

10:00 . Promising green solvents for the production of Gramicidin S biosurfactant extract from Aneurinibacillus aneurinilyticus isolated from corn steep liquor.  A.B. Moldes, K. Lvova, X. Vecino, B. Pérez-Cid, J.M. Cruz


11:00 . Learning the shapes: Self-assembling cellobiose-based glycolipids into mesoscale network materials.  S. Das, T.M. Reineke

Moscone Center
Room 306, South Bldg.
Mentoring Undergraduate Surface Science Research

Characterizing Organic Surfaces

A. Baber, L. B. Benz, G. Y. Stokes, Organizers
E. V. Iski, Organizer, Presiding

8:00 Introductory Remarks.

8:05. Undergraduate research: From laser pointers to ultrafast lasers. E. Borguet

8:30. Molecular behavior at liquid/liquid and solid/liquid colloidal soft interfaces. M. Subir


9:10. Adsorption of molecules to environmental interfaces with density functional theory. L. Tribe

9:30. Undergraduate investigations of environmental and biological interfaces using vibrational sum-frequency spectroscopy. A. Carpenter

9:50 Intermission.


10:30. Biophysical effects of bioactive molecules on self-assembled model membranes. S. Lee


11:10. 2D IR to determine effect of water on conformation of flexible eight membered ring. A.M. Casas, V. Wen, W. Fu, M. Leveille, J. Lu, N. Ge


11:50 Concluding Remarks.

Moscone Center
Room 301, South Bldg.
Nanohybrid Materials for Diverse Applications

N. Feliu Torres, A. Mews, Organizers
W. J. Parak, Organizer, Presiding

8:00 . Evaluating the catalytic efficiency of the matrix metalloproteinase (MMP-14) using AuNP−peptide conjugates. Z. Jin, N. Dridi, Q.A. Sang, H.M. Mattoussi


9:00 . Plasmonic metal organic frameworks as molecular sieves for optical sensing and catalysis. R. Alvarez-Puebla


10:00 . Single exosome profiling with gold nanoparticles for early cancer detection. X. Huang, K. Amrhein, M. Taylor, R. Wilson, Y. Wang, T. Hoang


10:40 . Steps towards mapping the protein corona around endocytosed nanoparticles. N. Feliu, W.J. Parak

Moscone Center
Room 312, South Bldg.

Nanomaterials

Functional Nanomaterials to Nanocrystal Superlattices

S. Hunyadi Murph, R. Nagarajan, C. M. Sims, D. L. Watkins, Organizers
J. A. Hollingsworth, Organizer, Presiding


8:40. Assessing a colloidal synthesis routes toward different phases in the Cr-(Ge)-Te system. D. Parobek, J. Watt, **S. Ivanov**

9:00. Semiconducting colloidal nanoplatelets as soft matter. **B. Abecassis**


10:00. Toward nanocrystal superlattices with fully delocalized charge transport. **M. Law**


11:00. Measuring and modulating photoinduced charge transfer from quantum dots. **B.M. Cossairt**, M. Homer, F. Eagle

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Moscone Center
Room 305, South Bldg.

**Surface, Interface and Coating Materials**

**Functional surface and coatings**

Z. Cao, S. Jiang, M. Qiao, K. Song, X. Yong, **Organizers**
M. Ma, **Organizer, Presiding**

8:00. Synergistic assembly of MoS$_2$ nanosheets and covalent organic frameworks for anti-corrosion coatings. **p. najmi**, M. Arjmand

8:15. Functional zwitterionic hydrogel-based coating for marine anti-fouling applications. **B. Song**, W. Wang, Z. Cao
8:30. Artificial cell-like polymersomes: From spatiotemporal control of biochemical reactions to cell-cell communications. **H. Lee**

9:10. Intermission.

9:20. Novel ice-shedding surfaces. **A. Tuteja**

10:00. Engineering interfaces and coatings with tough adhesive hydrogels. **J. Li**

10:40. Intermission.


11:30. Withdrawn

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Moscone Center
Room 304, South Bldg.

**Surface Chemistry**

S. Claridge, A. V. Teplyakov, X. Zhou, *Organizers*
L. Tribe, *Organizer, Presiding*

8:00. Surface chemistry of metal atomic layer deposition (ALD). **F. Zaera**

8:30. Vapor-phase halogenation of hydrogen-terminated silicon(100) ssing N-halogen-succinimides. **P. Raffaelle**, A. Shestopalov

8:50. Chemical profiles of the surface oxides in state of the art superconducting circuits. **M. Liu**


9:30. Intermission.


10:10. Ni nanocatalyst derived from LDHs based catalyst towards highly efficient CO2 hydrogenation. **G. Cui**
10:30. ReaxFF simulations of particle-induced low speed pre-ignition (LSPI) by calcium and magnesium nanoparticles. C. Burger, Z. Sun, J. Gao, Y. Ju

10:50. Adsorption and thermal evolution of nitrogen species on pristine and hydrogenated diamond surfaces by N₂ plasma. K. Huang


Moscone Center
Room 310, South Bldg

Colloidal Networks

Y. Colon, D. J. Milliron, T. Truskett, Organizers
C. Ofosu, Presiding

8:00 Introductory remarks.


8:30. Stress build-up under constant strain in soft glassy materials. V. Kumar, G.H. McKinley, Y.M. Joshi

8:50. Generalized rheological memory based on recoverable strain and its relation to nanoscale structure. K. Kamani, Y. Shim, J. Griebler, S. Narayanan, Q. Zhang, R. Leheny, J. Harden, S. Rogers


9:50. Inducing and tuning power-law rheology in transient DNA nanostar networks through dynamically modulated valence. N. Conrad, D. Fygenson, O. Saleh

10:10 Intermission.


11:00. Is rigidity percolation the precursor of colloidal gelation?. R. Castaneda Priego

11:30. Exploring topological alterations in vitrimers: The role of bond exchange dynamics and defects. H. Pandya, F. Khabaz
TUESDAY AFTERNOON

Moscone Center
Room 310, South Bldg

**Biomaterials and Biointerfaces**

E. S. Andreescu, S. Sinha Ray, *Organizers*
C. P. Collier, *Organizer, Presiding*

2:00 . 4D printed polymers for the next-generation deployable implants. **K. Chatterjee**


2:40 . Multi-responsive nanogels for theranostics of tumors. **A. Pich**

3:00 . Conjugation of IL-33 to microporous annealed particle scaffolds initiates a type 2 immune response. **C. Roosa**, S. Lempke, R. Hannan, J. Sturek, S. Ewald, D. Griffin

3:20 Intermission.

3:30 . Self-assembling coatings to protect microbes from processing stressors. **G. Fan**, A.L. Furst


4:10 . Withdrawn

4:30 . New approaches for fighting antimicrobial resistance based on electroactive stimuli-responsive materials. **M.M. Fernandes**

Moscone Center
Room 312, South Bldg.

**Langmuir Lectures and ACS Applied Materials and Interfaces Award Lecture**

D. Miller, *Organizer, Presiding*
2:00 Introductory Remarks.

2:10 High-throughput materials discovery with nanomaterial megalibraries. C.A. Mirkin

3:00 New tools and old models to image and understand the interfacial dynamics governing separations at the single analyte limit. C.F. Landes

3:50 Diverse and unique droplets assembled from liquid crystalline oligomers and composites. S. Yang

Moscone Center
Room 307, South Bldg.

Basic Research in Colloids, Surfactants and Interfaces

S. D. Banziger, Presiding

2:00 Temperature-induced phase separation in hydrogel microcapsules for controlled encapsulation and release. J. Lee, H. Lee

2:20 Biodegradable lipid-based smart polymeric micelles for anticancer drug delivery. H. Wang, A. Ullah

2:40 Elastomeric microparticles for shape-encoded analytical assays. L.A. Radosevich, C. Thome, W. Shields

3:00 Impact of uniform facets on the thermodynamics of ligand exchanges on colloidal quantum dots. A. Brewer, J.J. Calvin, P. Alivisatos

3:20 Solid Formulations in Agriculture. S.D. Banziger

3:50 Intermission.

4:10 Recyclable and self-driven Magnetocleaners for scalable micro/nanoplastics removal from non-marine waters. C. Wu, J. Tang


5:10 Withdrawn

Moscone Center
Room 308, South Bldg.

Biosurfactants

Peptides

A. Izmitli, A. D. Kanthe, D. Miller, C. J. Tucker, Organizers
K. J. Stebe, Organizer, Presiding

2:00 . Design of bioactive supramolecular assemblies with amphiphilic peptides. S.I. Stupp


3:00 . Surface rheology of peptide surfactants (PEPS) for rare earth element recovery. S.A. Crane, J. Deng, M. Molaei, N. Chisholm, L. Ortizno Macias, J. Marmorstein, Y. Wang, F. Jiménez-Ángeles, P. Sun, M.L. Schlossman, C. Maldarelli, R.S. Tu, M. Olvera De La Cruz, E. Petersson, I.J. Dmochowski, K.J. Stebe

3:30 . Molecular dynamics study of the interfacial adsorption of peptide surfactants for lanthanide ions recovery. F. Jimenez Angeles, L. Ortizno Macias, Y. Wang, S.A. Crane, R.S. Tu, C. Maldarelli, M. Olvera de la Cruz, K.J. Stebe

4:00 Intermission.

4:10 . EXAFS measurements of the complexation of rare earth ions to LBT peptide surfactants at the water surface. B. Sapkota, E.A. Binter, A. Ruckel, P. Sun, D.J. Walwark, W. Bu, S.A. Crane, L. Ortizno Macias, K.J. Stebe, C. Maldarelli, R.S. Tu, M.L. Schlossman

4:40 . Interfacial dynamics of peptides and proteins air-water interfaces. A.D. Kanthe, W. Bu, M.K. Bera, C. Maldarelli, R.S. Tu

Colloidal Networks

Y. Colon, D. J. Milliron, T. Truskett, Organizers
Z. Sherman, Presiding

2:00. Dexterous magnetic microrobots from the directed assembly of defined prismatic subunits. K.M. Kreienbrink, K.E. Hawkins, C.C. Kemper, C.W. Shields IV


2:40. Simulating assembly of structures from colloids with mobile binders and explicit bond kinetics. G.M. Hocky

3:10. Controlling structures and functions of a colloidal DNA liquid. O.A. Saleh

3:40. Exploring and exploiting network formation in folded protein hydrogels. L. Dougan

4:10 Intermission.

4:30. Dynamic covalent tetra-PEG hydrogels with tunable bond exchange kinetics. A. Rosales

5:00. Percolation-induced gel–gel phase separation in a dilute polymer network. T. Sakai

5:30. Using interactions and clustering from coarse-grained models to interpret the structure and viscosity of monoclonal antibody solutions at intermediate to high concentration. A. Chowdhury, W.D. Kimball, A. Lanzaro, T. Truskett, K.P. Johnston

Symposium in Honor of Cynthia M. Friend

D. Chen, M. L. Personick, Organizers
J. Batteas, Organizer, Presiding
K. L. Queeney, Presiding

2:00 Introductory Remarks.


3:05. ab-initio studies of chemical reactions on surfaces of various materials. E. Kaxiras

3:35 Intermission.

3:55. Engineering metal-organic framework functionalities for water harvesting and catalysis. L. Gagliardi

4:25. Mechanistic analysis of Cu-catalyzed electrochemical CO₂ reduction reaction. B. Xu

4:55. Electrochemical approaches to decarbonizing chemicals and fuels. H. Wang

5:25. Interfaces and catalysis for electrochemical applications. J. Lattimer, D.J. Strasser, M. Kastelic, S. Zhong, M. Pupcevski, S.A. McCatty, T. Zhang

Moscone Center
Room 304, South Bldg.

Nanoscience and Nanotechnology for Defense and Security

R. Nagarajan, Organizer, Presiding

2:00. Materials design meets ductile ceramics for extreme environments. S. Ren

2:30. Hybrid assembly of Ti₃C₂Tx MXene and graphene for highly stable heating elements. T. Han

3:00. Low dimensional materials for Warfighter protection. J.R. Uzarski


4:00. Infrared colloidal quantum dot photodetectors. A. Sahu

4:30. Resilient authentication with quantum-protected security primitive. Z. He, M. Elizarov, N. Li, F. Xiang, A. Fratalocchi

5:00. Accessing higher energy plasmonics by phase and composition control. M.B. Ross

Moscone Center
Room 306, South Bldg.

**Surface, Interface and Coating Materials**

**Applied Surface Research and Virtual Session**

Z. Cao, S. Jiang, M. Qiao, K. Song, X. Yong, *Organizers*
M. Ma, *Organizer, Presiding*

2:00. Polymeric n-Halamines for antimicrobial surfaces. **M.D. Hein**

2:40. Improving paint performance and durability by applying design of experiments, high-throughput methodology, and predictive modeling. **P.S. Majumdar**

3:20. Enhancing corrosion resistance and primer coating adhesion on magnesium and magnesium alloys using atmospheric plasma and lithium salt-assisted plasma treatments. **G. Jang**, J. Jun, Y. Su


4:35 Intermission.

4:45. Interfacial investigations of gas hydrates for plugging risk assessment. A. Majid, N. Ismail, H. Stoner, **C.A. Koh**
5:00 . Percolation in networks of liquid diodes. C. Sammartino, Y. Shokef, B. Pinchasik


WEDNESDAY MORNING

Moscone Center
Room 310, South Bldg

Biomaterials and Biointerfaces

E. S. Andreescu, C. P. Collier, Organizers
S. Sinha Ray, Organizer, Presiding


8:20 . Withdrawn

8:40 . Collagen mimetic materials based on hierarchically assembled homopolypeptides. E. Buvalaia, M. Dulle, M. Kruteva, R. Biehl, S. Foerster

9:00 . Role of gold nanostar shapes in modulating macrophage responses and activities. .. Kenry

9:20 Intermission.


Moscone Center
Room 307, South Bldg.

Basic Research in Colloids, Surfactants and Interfaces

S. Hunyadi Murph, U. Natarajan, Z. Niroobakhsh, Organizers
A. Mallia, Organizer, Presiding

8:00 Introductory Remarks.

8:05 . Controlled fabrication of metal-organic framework monoliths with hierarchically porous structure. H. Zhu

8:25 . Specific ion effects: Hofmeister cations and coumarin fluorescence. N. Metzger, Y. Zhang

8:45 . Scalable route to monodisperse colloidal Ni₃Co₃₋ₓS₄₋ₓ nanoparticles using amino acids. T. Meyer


9:25 . Designing sequence-defined short oligomers for self-assembly and hybridization with functional materials to create conductive soft materials. J. Kim

9:45 . Understanding borate-mediated aggregation of vancomycin hydrochloride: pH dependence and investigation using UV-Vis absorption, fluorescence spectroscopy, and capillary electrophoresis. A. Mallia, S. M Wongela, N.Y. Forlemu, S. Tangirala

10:05 Intermission.

10:20 . Withdrawn

11:00 . Electrically conductive porous Ti3C2Tx MXene-polymer composites from high internal phase emulsions (HIPEs). H. Cao, Y. Wang, A. Sarmah, K. Liu, Z. Tan, K. Arole, J.L. Lutkenhaus, M. Radovic, M. Green, E. Pentzer


Moscone Center
Room 306, South Bldg.

Colloidal Networks

Y. Colon, D. J. Milliron, T. Truskett, Organizers
N. Conrad, Presiding


8:20 . Tuning the assembly of siliceous materials for stabilizing oil-water emulsions and architecting siliceous materials for advanced separations. G. Gadikota, H. Asgar, S. Mohammed, X. Gao, A. Mamidala

8:40 . Microscopic dynamics of thermoreversible linker mediated nanocrystal gel assemblies. C. Ofosu, J. Kang, T. Truskett, D.J. Milliron

9:00 . Phase transitions of polymer-stabilized gold nanoparticles studied with X-ray photon correlation spectroscopy. F. Schulz, A. Jain, F. Westermeier, V.I. Markmann, F. Dallari, Y. Zhang, W.J. Parak, G. Grübel, F. Lehmkühler

9:30 . Multicomponent nanocrystal gels. N.C. Bigall

10:00 Intermission.


10:40 . Colloidal chalcogenide gels from oxidative assembly of anisotropic nanoparticles: Role of polarity in mechanism of attachment and consequences for functionality. L. Silva, V. Alevato, S.L. Brock

11:30. Pickering emulsions to improve the adhesion between casing and cement. **R.C. Advincula**, X. Cheng, A. Barthjia

Moscone Center
Room 301, South Bldg.

**Nanomaterials**

**Low-Dimensional Porous Materials From Metal-Organic Frameworks to Polymers and Zeolites**

S. Hunyadi Murph, R. Nagarajan, C. M. Sims, D. L. Watkins, *Organizers*
J. A. Hollingsworth, *Organizer, Presiding*

8:00. Comparing nanoscale structural and electronic domain sizes in amorphous coordination polymers. **J.S. Anderson**, J. Xie, P. Crossland

8:30. Well-defined heterometallic framework architectures of molecular qubits. **E.A. Dolgopolova**

9:00. Efficient photon upconversion and tunable exciton emission in tailored heterointerfaces between 2D atomic crystals and 2D molecular frameworks. **T. Kempa**

9:30. Withdrawn

9:50. Molecular additives as competitive binding agents to control supramolecular-driven nanoparticle Assembly. **R.L. Li**, N. Sbalbi, O.F. Aly, M. Ye, R. Macfarlane


Moscone Center
Room 304, South Bldg.

Biosurfactants

Home & Personal Care

A. Izmitli, A. D. Kanthe, D. Miller, K. J. Stebe, Organizers
C. J. Tucker, Organizer, Presiding


8:30 . Modeling tools for next generation surfactants and formulations. P.H. Koenig


9:30 . Perspective on the importance of micelle microstructure and dynamics to design of products containing sugar surfactants. K.J. Stebe

10:00 . Physico-chemical aspects behind the use of biosurfactants in the eco-design of cosmetic formulations. G.S. Luengo

10:30 . Formulation design of biosurfactant based consumer products. S. Amin

11:00 . Building the viscosity of mild surfactant mixtures containing biosurfactants for applications in personal cleansers. N. Li, H. Shen, S. Wu, A. Potanin


Moscone Center
Room 308, South Bldg.

Nanoscience and Nanotechnology for Defense and Security
R. Nagarajan, *Organizer, Presiding*

8:00 . Harnessing the precision of biological binding events to drive nanomaterial Assembly.  
**M.R. Knecht**

8:30 . Synthesis and applications of peptoid-based crystalline nanomaterials.  
**C. Chen**

9:00 . Self assembling nanoparticle enzyme clusters.  

**R. Jin**, L. Pham, **T. Walsh**

10:00 . Nanostructured sulfur rich polymers for infrared polarizers.  
**J. Wie**

10:30 . Lighter and stronger epoxy nanocomposite materials for soldier protection.  
A. Mali, P. Agbo, L. Zimmerman, **L. Zhang**

11:00 . Colloidal electronic matter.  
**M. Manion**, S. Park, **A. Liu**

**E. Runnerstrom**

Moscone Center  
Room 312, South Bldg.

**Surface Chemistry**

A. V. Teplyakov, L. Tribe, X. Zhou, *Organizers*  
S. Claridge, *Organizer, Presiding*

8:00 . Tuning the electric fields and hydration of electrochemical interfaces with surfactants.  
A.K. Pennathur, A. Maitra, C. Tseng, **J. Dawlaty**

8:30 . Desolvation and surface adsorption of multivalent ion measured by vibrational spectroscopy.  
**A. Maitra**, E. Chiang, J. Dawlaty

8:50 . Probing surface hydroxyls of metal oxides: Fluoride substitution on defective blue TiO$_2$ and beyond.  

9:30 . Electrodeposition of MIL-88B(Fe) on medical-grade stainless-steel surfaces. **E. Lucsik, F. Tian**

9:50 Intermission.


10:50 . Greasy cations also strongly bind to neutral macromolecules in aqueous solutions. U.E. Ertekin, E. Issever, **H. Okur**

11:10 . Radical inhibition by silica in high organic content concentrated emulsion gels. **F.D. Blum, T. Zhang**

11:30 . Linking molecular structure and shear-induced surface reactivity in tetraalkylammonium orthoborate ionic liquids. **F. Mangolini, J. Yan, H. Lien**

Moscone Center
Room 305, South Bldg.

**Symposium in Honor of Cynthia M. Friend**

J. Batteas, M. L. Personick, **Organizers**
D. Chen, **Organizer, Presiding**
X. Deng, **Presiding**

8:00 Introductory remarks.

8:05 . Interplay of computation and experiment for surface structure and chemistry of dilute alloys. **M. Montemore**

8:35 . Adsorption on metal surfaces beyond density functional theory. **J. Sauer**

9:05 . Metal atom chemical potential: A key descriptor for predicting catalyst performance, and how to estimate it. **C.T. Campbell**

9:35 Intermission.
10:05 . Mobility and reactivity of porphyrins on metal surfaces. H. Steinrueck

10:35 . Trimetallic alloys for active and selective surface chemistry. E.H. Sykes


11:35 . Molecular dynamics for dynamic molecular processes on catalytic surfaces. B. Kozinsky

WEDNESDAY AFTERNOON

Moscone Center
Room 304, South Bldg.

Nanohybrid Materials for Diverse Applications

N. Feliu Torres, W. J. Parak, Organizers
A. Mews, Organizer, Presiding


2:30 . Microfluidic synthesis of multilayered lipid–polymer hybrid nanoparticles for the formulation of low solubility drugs. N. Kambar, C. Leal

2:50 . Multi-sensing and self-healing skin for robotic applications. Q. Chen, A. Braun


4:10 . Withdrawn

Moscone Center
Room 307, South Bldg.

Basic Research in Colloids, Surfactants and Interfaces

D. Yu, Presiding

2:00 . Mixed micelle structure and composition from SANS and MD. **M. Tsianou**, S. Kancharla, D. Dong, D. Bedrov, P. Alexandridis

2:20 . Recent developments in the methods and applications of electrostatic self-assembly. **E. Besley**

2:40 . Understanding the role of end-capping and charge pattern on solution micellar structure of ionic polypeptoid block copolymers with controlled ionic sites. **M. Zhang**, Y. Liu, D. Zhang

3:00 . Role of hydrophilic-lipophilic balance and oxygen functional groups in the interfacial behavior of non-ionic surfactants unraveled by molecular simulations. **X. Sun**, H. Zeng, T. Tang


4:00 Intermission.


5:35 . Molecular simulation study of adsorption of vinyl polycarboxylic acids at water surface: effect of stereo-chemistry and hydrophilicity. R. Kurapati, **U. Natarajan**
Moscone Center
Room 310, South Bldg.

**Biosurfactants**

**Method**

A. Izmitli, A. D. Kanthe, K. J. Stebe, C. J. Tucker, *Organizers*
D. Miller, *Organizer, Presiding*

2:00. Self-assembly of microbial biosurfactant amphiphiles. **N. Baccile**


3:00. Biosurfactant solution self-assembly and surface adsorption. M. Tsianou, **P. Alexandridis**

3:30. High-shear surfactant rheology at NIST. **S.D. Hudson**, P. Salipante, M. Cromer, R. Murphy, K. Weigandt

4:00 Intermission.

4:10. Chickpea or egg problem in engineering plant-based emulsions. N. Nikolova, C. Martinez, L. Hassan, K. Al-Zahabi, S. Sepahvand, M. Boehm, S. Baier, **V. Sharma**

4:40. Surface-active biopolymer particles with engineered morphology: Sustainable Pickering stabilizers and active plastics microcleaners. **O.D. Velev**

Moscone Center
Room 306, South Bldg.

**Colloidal Networks**

Y. Colon, D. J. Milliron, T. Truskett, *Organizers*
T. Holoman, *Presiding*

2:00. Bottom-up fabrication of anisotropic nanoparticle clusters and large-scale arrays by using DNA origami assembly. **R. Wang**


3:10. Aging of colloid-polymer dispersions and re-entrant rheological behavior at interfaces and the microscale. S. Bhatia


4:10 Intermission.


5:00. Macroscopic nanoparticle superlattices via self-assembly. R. Macfarlane

5:20. Phase transition in polymeric systems for bioinspired materials working with water. R. Hagiwara, T. Nguyen, L. Wu, K. Okeyoshi

Moscone Center
Room 312, South Bldg.

Mentoring Undergraduate Surface Science Research

Understanding Adsorption and Surface Functionalization

L. B. Benz, E. V. Iski, G. Y. Stokes, Organizers
A. Baber, Organizer, Presiding

2:00 Introductory Remarks.

2:05. Physical characterization of the microtubule associated protein tau using atomic force microscopy. Z. Donhauser

2:30. Understanding the surface structures of binary SAMs. G. Avila-Bront

2:50. Alkyne-derived molecular layers on nanoporous gold electrodes. E.C. Landis

3:10. Nanocelluloses research at a primarily undergraduate institution: Insights, challenges and rewards. R. Sunasee
3:30. Two decades of atomic force microscopy with undergraduate student researchers. K. Sinniah

3:50 Intermission.

4:10. Guiding undergraduates in computational nanosurface interaction research. C.A. Daly

4:30. Approaching an unknown state of matter: Plasma chemistry research with undergraduates. M.J. Hawker


5:10. STM studies of organic thiocyanates on Au(111) as a way of expanding the self-assembly toolkit. A.F. Raigoza

5:30. Comparison of dynamics and mechanisms between electrochemically etched tungsten STM probes by AC and DC power supplies. F. Xu, N. McLane, R. Roddy

5:50 Concluding Remarks.

Moscone Center
Room 302, South Bldg.

Surface Chemistry

S. Claridge, A. V. Teplyakov, X. Zhou, Organizers
L. Tribe, Organizer, Presiding

2:00. On-surface synthesis of porous graphene nanoribbons and nanosheets. J. Zhu

2:30. Chirality from scratch: How the combination of achiral elements can bias the preferential formation of chiral self-assembled networks. Z. Tessari, S. De Feyter

2:50. Localized chemical manipulation of surfaces utilizing thermal Scanning Probe Lithography (t-SPL). N. Hendricks, J. Chaaban, E. Cagin

3:10. Easily implementable lock-in amplifier-based pulsed force Kelvin probe force microscopy for surface potential mapping at < 10 nm spatial resolution under ambient conditions. X. Xu, A. Zahmatkeshsaredorahi

3:30 Intermission.
3:50 . Scalable preparation of intrinsically chiral metal surfaces for enantioselective processes. **N. Shukla, A.J. Gellman**


4:30 . Dynamic and multifunctional metal-phenolic coordination nanopatterns. **C. Chen, C.A. Mirkin**

4:50 . Exploring the role of interfaces in the molecular orientation of vapor-deposited glasses. **D. Sunday, T.J. Ferron, M. Fiori, M.D. Ediger, D. DeLongchamp**

Moscone Center
Room 305, South Bldg.

**Symposium in Honor of Cynthia M. Friend**

J. Batteas, D. Chen, *Organizers*
M. L. Personick, *Organizer, Presiding*
B. Xu, *Presiding*

2:00 Introductory remarks.

2:05 . Interactions of single and few layer MoS$_2$ with Au surfaces. **J. Batteas**

2:35 . Functionalized polymer thin films for tunable surface wettability. K. Fisher, R. Elizabeth, M.E. Buck, **K.L. Queeney**

3:05 . Preparation, characterization, and reactivity of model catalysts. **H. Freund**

3:35 Intermission.

3:55 . Thermodynamics and kinetics of heterogeneous nucleation of CaCO$_3$ in water-energy systems. **Y. Jun, Q. Li, Y. Zhu, Y. Wang, B. Lee**

4:25 . Understanding the selectivity of CO2 reduction towards multi-carbon products. Z. Cui, S. Cho, **A. Co**

4:55 . Reaction of aromatic molecules on model gold catalysts. **J.C. Rodriguez-Reyes**

Moscone Center  
Room 301, South Bldg.  

**Nanomaterials**

C. M. Sims, *Organizer, Presiding*

**2:00**. Semi-automated exploration of aqueous two-phase extraction parameters for single-wall carbon nanotube separations via fluorescence spectroscopy. **C.M. Sims, J.A. Fagan**

**2:20**. Reactive conjugated polymers for selective dispersion of single-walled carbon nanotubes. **A. Adronov**

**2:40**. Engineering a polystyrene/carbon nanotube/PEDOT:PSS conductive nanocomposite: The ultimate shield against electromagnetic interference. **N. Keshmiri, A. Ahmadian Hoseini, p. najmi, J. Liu, A. Milani, M. Arjmand**

**3:00**. Effect of carbon nanotubes on inhibition of liquid metal spreading on metallic surfaces. **A. Zhexembekova, C. Lee**

**3:20**. Customizing the self-assembly of supramolecular peptide nanotubes via hydrophobic interactions. **M. Zeng, S. Perrier**

**3:40**. Withdrawn

**4:00**. Magnetic transition changes resulting from strain generated by pressurization of intercalated cobalt nanoparticles in linked graphene oxide. **N. Sugak, J. Prestigiacomo, M.K. Kolel-Veetil, S. Mukhopadhyay, M. Osofsky, L. Pfefferle**

**4:20**. Using zerovalent metal-ligand complexes as precursors for nanoparticle composites. **S. Schrettl**

**4:40**. Tuning the parameters of DNA-based nanothermometry to better understand surface-tethered DNA melting. **A. Crawford, P.A. Reinhardt, K.A. Willets**

**5:00**. Adaptive membrane architectures improve the photostability of silver nanoparticles. **M.R. Mackiewicz**

**5:20**. Water soluble metal oxide-Ti$_3$C$_2$T$_x$ MXene composite for rapid gas sensing at room temperature. **E. Yang, S. Kim**
5:40. Enhancing CO\textsubscript{2}-foam stability by functionalized silica nanoparticles for reservoir fracturing. S. ALI, M. Al Sakkaf, M. Mansha, S.A. Khan, P. Karadkar, B. Harbi

Moscone Center
Room 308, South Bldg.

Nanoscience and Nanotechnology for Defense and Security

R. Nagarajan, Organizer, Presiding

2:00. Smart and programmable sponges for protection. O.K. Farha

2:30. Molecular simulation of activation reaction mechanisms in MOF-808. A. Hinkle, I. Iordanov, M.A. Browe, S. Garibay

3:00. Novel composite of a graphene oxide membrane and membrane supported metal-organic framework for a highly effective breathable barrier for toxic vapors and chemical warfare agents. S. Yufeng, P. Cheng, Z. Iqbal, K.K. Sirkar, G.W. Peterson

3:30. Metal-organic framework supported single atoms for the capture and degradation of chemical warfare agent simulants. M.C. Boyanich, E. Johnson, A.J. Morris, J.R. Morris

4:00. Functionalizing metal organic frameworks with sorbent moieties for hazardous chemistries of interest to the DoD. C. Breshike, D. Corbin, T.C. Cao, M.R. Papantonakis, A. Shabaev, R. McGill

4:30. Effect of linker geometry on NU-1000 singlet oxygen photocatalysis for toxic chemical degradation. I. Iordanov, M.A. Browe, A. Kulisiewicz, J.B. DeCoste

5:00. Elucidation of structure-property relationships for organophosphate sorbents based on metal-organic frameworks. D. Corbin, T.C. Cao, C.J. Breshike, M.R. Papantonakis, V.K. Nguyen, R.A. McGill

5:30. Nanomaterials research pipeline for next generation protection solutions. C. Bass

5:45 Discussion.

Impact of PFAS on Environment and Health

Sponsored by ENVR, Cosponsored by COLL, GEOC and TOXI
THURSDAY MORNING

Moscone Center
Room 307, South Bldg.

Basic Research in Colloids, Surfactants and Interfaces

J. D. Driskell, Presiding

8:00. Friction of methyl-branched fatty acids. R. Cui, M. Ruths

8:30. Structure and activity of thiolated enzymes adsorbed onto gold nanoparticles to form highly functional bioconjugates. J.D. Driskell, M.B. Riley, F.E. Breausche, J.R. Walder, A. Somerlot, C. Baker

9:00. Pressure and composition effects on nanoparticle ligand-solvent interactions. S. Salas Sanabria, L. Hanson


10:00 Intermission.

10:15. Airborne hydrocarbon contamination of graphite as characterized by Kelvin probe force microscopy (KPFM). H. Liu

10:35. Control of interfacial tension through functionalized amphiphilic block copolymers for environmental sensing. T. Durkin, B. Barua, S. Savagatrup

10:55. Kinetic temperature and pressure of an active Tonks gas. E. Schiltz-Rouse, H. Row, S. Mallory

11:15. Longitudinal waves in lipid membranes near the order-disorder transition. M. Mussel

Mentoring Undergraduate Surface Science Research

Electrochemistry and Metal Surfaces

A. Baber, L. B. Benz, E. V. Iski, Organizers
G. Y. Stokes, Organizer, Presiding

8:00 Introductory Remarks.

8:05 Light-addressable electroanalysis with semiconductor/metal nanoparticle junctions. G. O'Neil

8:30 Computational investigation of solid-liquid interfaces by undergraduate researchers. K. Letchworth-Weaver


9:20 Using template-assisted electrodeposition to deconvolute the role of nanostructure and surface chemistry in high-surface heterogeneous nanomaterials for electrochemical sensing. E. Gillette, N. Shey, R. Margetts, K.A. Manlapaz, L. Del Rosario

9:45 Intermission.

10:05 Research with undergraduates towards generation and applications of metal nanoparticle assemblies on functionalized surfaces. K. Bandyopadhyay


11:20 Working with undergraduates to understand small alcohol adsorption and reaction on Au(111)–based model catalysts under ultrahigh vacuum. A. Baber

11:45 Concluding Remarks.
Nanohybrid Materials for Diverse Applications

N. Feliu Torres, A. Mews, W. J. Parak, Organizers
M. I. Dittmar, V. Mittag, Presiding


8:30 . Withdrawn


9:50 . Colloidal magnetic nanoparticles and clusters with anisotropic shape for magnetic hyperthermia: From the synthesis to their In vivo characterization. T. Pellegrino


10:50 . Laser-induced trapping of metastable amorphous-AIOₓ/C (2.5< x ≤3.5) nanocomposites. E.M. Davis, G. Duscher, J. Wen, D. Mukherjee

11:10 . Collapsing mechanisms of nanoparticle-thermoreponsive hydrogel composites. K. Zygadlo, L. Hanson


Moscone Center
Room 301, South Bldg.
Nanomaterials

From Nano-Assembly Control to Properties Control


8:00. Controllable colloidal nanomaterial dispersion into three-dimensional porous matrices. J. CHEN, W. Liao

8:20. Influencing the self-assembly of nanocubes through “hard” and “soft” roundness. P.F. Pieters, E. Vargo, Y. Qian, A. Alivisatos, T. Xu

8:40. Formation of highly stable nanoparticle supercrystals with diverse building blocks and covalent bonding interaction. j. kim, S. Lee, J. Dey, J. Jang, S. Choi

9:00. Computational design and realization of pyrochlore lattice with DNA nanotechnology. H. Liu, M. Sample, M. Matthies, H. Yan, P. Sulc


9:40. Electrical characterization of high efficiency top illuminated midwave HgTe colloidal quantum dot photodiodes. J. Peterson, P. Guyot-Sionnest

10:00. How to quantify electrons in plasmonic colloidal metal oxide nanocrystals. S.A. Shubert-Zuleta, B. Tandon, B. Roman, X. Gan, D.J. Milliron

10:20. Withdrawn

10:40. Excited state phenomena and structural properties of CdSe colloidal quantum dots. T. Goldzak, A. McIsaac, T.A. Van Voorhis

11:00. Investigation of defects in individual photo-oxidized InP/ZnSe/ZnS quantum dots by high-resolution imaging. H. Baek, J. Park


Moscone Center
Room 308, South Bldg.
Nanoscience and Nanotechnology for Defense and Security

R. Nagarajan, Organizer, Presiding


8:30 . Decomposition of DMMP on metal-modified TiO$_2$(111) surface. M. Bonney, J. Wang, L. Shi, M.G. White

9:00 . Dual-phase carbon nanotube chemiresistor array utilizing hygroscopic aqueous films for selective detection of toxic compounds. S. Lee, C. Lee


10:30 . Open-air plasma treatment of fabrics to enhance nanoparticle adhesion for chem-bio protection. S. Karande, O. Grimm, N. Pomerantz, G.W. Peterson, J.E. Whitten

11:00 . Designed metal-containing peptoid membranes as enzyme mimetics for enhanced organophosphate hydrolysis. T. Trinh, T. Jian, R.N. Zuckermann, C. Chen

Moscone Center
Room 305, South Bldg.

Surface Chemistry

A. V. Teplyakov, L. Tribe, X. Zhou, Organizers
S. Claridge, Organizer, Presiding

8:00 . Conformational control of colloidal ultrathin nanoplatelets by surface chemistry. B. Abecassis

8:50. Solvent-ligand shell mediated self-assembly of chalcogenide dots and nanoplatelets under high pressure and in liquid environments. **P. Banerjee**, B. Lee, E. Shevchenko


9:30 Intermission.

9:50. Rare-earth element capture by surface ionic interactions in layered synthetic zeolites. **P. Chatterjee**, Y. Han, T. Kobayashi, R. Behera, T.H. Johnson, T. Prozorov, J.W. Evans, W. Huang


Moscone Center
Room 310, South Bldg

**Colloidal Networks**

Y. Colon, D. J. Milliron, T. Truskett, **Organizers**
T. A. Wilcoxson, **Presiding**

8:00. Artificial synthesis of conjugated microporous polymers: How solvent influences structure. **C. Mollart**, A. Trewin

8:20. Fabrication of co- and ter-polymeric poly(cyclodextrin) particles with selective and superior carrying abilities of antibiotic and anticancer drugs. A.S. Yilmaz, R.S. Ayyala, **N. Sahiner**


9:40 Intermission.

10:00 . Withdrawn

10:30 . Molecular modeling of soft porous coordination polymers. **Y. Colon**

11:00 . Many-bodied plasmon ruler for nanoparticle dispersions and assemblies. **Z. Sherman, D.J. Milliron, T. Truskett**


11:40 . Aggregation process of amyloid beta 1-40 coated gold nano-colloids. **K. Yokoyama**

Moscone Center
Room 306, South Bldg.

**Symposium in Honor of Cynthia M. Friend**

M. L. Personick, *Organizer*
J. Batteas, D. Chen, *Organizers, Presiding*

8:00 Introductory remarks.

8:05 . Wettability-based ultrasensitive detection of amphiphiles through defect engineering in self-assembled monolayers. **J. Aizenberg, X. Wang**

8:35 . Oxidation catalysis using gold and gold palladium alloy catalysts. **G. Hutchings**

9:05 . Understanding dilute alloy catalysts for oxidation and hydrogenation reactions. **J.D. Lee, R.J. Madix, C.M. Friend**

9:35 . Unraveling 1-hexene hydrogenation over dilute Pd-in-Au alloys. **J.E. van der Hoeven**

10:05 Intermission.

10:55. Oxidative self-coupling of alcohols over gold catalysts: Across the Great Divide and beyond. C. Reece


Virtual Only
Virtual Session

Nanomaterials


10:00. Anisotropic semiconductor nanocrystals: From heavy-metal-free compounds to metal halide perovskites. G. Jia

10:20. Withdrawn

10:40. Unraveling the transformation pathways in semiconductor clusters by studying the formation of spectroscopically pure (CdS)_{13} magic-size clusters. Y. Deng, J. Liang, Y. Wang

11:00. Modeling the kinetics of nanoparticle formation. R. Szabo, G. Lente

11:20. Responsive nanoporous materials from “hairy” nanoparticles. I. Zharov

11:40. Advances in single-chain polymer nanoparticles research. J.A. Pomposo


12:20. G4.0PAMAM dendrimer as an effective nanocarrier for anticancer drugs. M. Szota, B. Jachimska

12:40. Understanding and improving the thermal stability of lead iodide perovskite nanocrystals. Y. Zhang, B.A. Korgel