

COLL

DIVISION OF COLLOID AND SURFACE CHEMISTRY

D. Miller and R. Gupta, *Program Chairs*

SUNDAY MORNING

Sheraton Denver Downtown Hotel
Director's Row E

Nanohybrid Materials for Diverse Applications

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

8:00 . X-ray photon correlation spectroscopy towards nanomaterials in biological applications. **N. Dageforde**, F. Otto, W.J. Parak

8:20 . Nanoprobes for intracellular imaging: Testing reproducibility in the nanobiosciences. **M. Said**, M. El Gharib, R. Levy

8:40 . Functionalized “glow-in-the-dark” nanocomposites: A generalized optode-based platform for autofluorescence-free sensing in biological systems. **T. Sodia**, K.J. Cash

9:00 . RNA co-delivery nanoparticle-mediated concurrent restoration of tumor suppressor and inhibition of tumorigenic driver for synergistic cancer treatment. **R. Farokhzad**, Y. Zhang, J. Shi

9:20 . Effects of the stabilizing coating on protein corona formation around gold nanoparticles. **H.M. Mattoussi**, N. Dridi, Z. Jin

Sheraton Denver Downtown Hotel
Governor's Square 16

Basic Research in Colloids, Surfactants & Interfaces

S. Hunyadi Murph, S. Kamdar, A. Mallia, U. Natarajan, Z. Niroobakhsh, *Organizers*
D. Miller, *Presiding*

8:00 . Ultrasound-responsive nanodroplet for targeted cell therapy. **N.R. Jana**

8:20 . Design of azlactone-functionalized polymer coatings using entirely aqueous fabrication methods. **C.E. Lundberg**, W.M. Breining, I.A. Bravo, H. Agarwal, D.M. Lynn

8:40 . Enhancing phase separation performance via innovative dissolved air flotation (DAF) incorporation into a pilot-scale flocculation process. **B. Abada**, D. Smith, M. Valade, E. Wert, A. Atkinson

9:00 . Impact of degree of ethoxylation on sodium lauryl ether sulfate surfactant adsorption onto silicone-in-water emulsion droplets. **D. Miller**, M. Jing, D. Yu, W. Young, B. Cressman, J. Defelippis, J. Gu, L. Leal, N. Fernandes, M.L. Pacholski, S. Vuong, R. Smith, C. Nimako-Boateng, X. Wei, B. Reiner, Y. Rao

9:20 . Molecular adsorption at soft interfaces: Effect of surface charge and aromaticity. D. Coers, S. Rubyat, O. Fadayomi, **M. Subir**

9:40 . Multifunctional coatings by control and switching of the wettability of polymer brush films. **P. Uhlmann**, A.S. Münch

10:00 . Colloidal stabilization of CoF-300 particles synthesized with substituted benzoic acids. D. Kim, K. Carlson, A. Chew, Z. Jackson Delos Angeles, J. Johnson, A. Mojica, S. Ottoes, B. Posson, **L. Hamachi**

10:20 . Withdrawn

Sheraton Denver Downtown Hotel
Governor's Square 15

Biomaterials & Biointerfaces

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

8:00 . Cellular trafficking and retention of multivalent nanoparticle-photocrosslinkable anti EGFR affibody complexes. **S. Curry**, A.P. Goodwin, J.N. Cha

8:20 . Intratumoral injectable radiation-responsive immune niche to improve the abscopal effect in cancer immunotherapy. **K. Au**, A. Wang

8:40 . Formable *In-Situ* bioactive glass composites for bone regeneration. **M. Matinfar**, J.A. Nychka

9:00 . Comparative pore structure and dynamics for bacterial microcompartment shell protein assemblies in sheets or shells. **S. Raza**, D. Sarkar, L.J. Chan, J. Mae, M. Sutter, C. Kerfeld, C.J. Petzold, C.Y. Ralston, S. Gupta, J.V. Vermaas

9:20 . Zwitterionic bottlebrushes nanoparticles for mucosal transport. **S. Kim**, J. Lee, K. Cureno Hernandez, Z. Cartwright, M. Herrera-Alonso

9:40 . 4D granular composites to program the shaping of complex topological tissues. **N. Di Caprio**, J.A. Burdick

10:00 . Multifunctional nanocarriers: enabling tumor vaccination by co-encapsulating antigen and adjuvants for tumor vaccination in vivo. **V. Mailänder**, K. Landfester

Sheraton Denver Downtown Hotel
Governor's Square 17

Colloidal Semiconductor Nanocrystals (Including Perovskite Nanocrystals)

Clusters & Nanocrystals: Harnessing the Synthetic Mechanism

G. Jia, J. Macdonald, X. Yang, *Organizers*
S. Jeong, *Organizer, Presiding*

8:00 . Chirality magic from magic-sized clusters. **R.D. Robinson**

8:25 . Ceramic-like stable perovskite nanocrystals toward the application of Micro-LED. **L. Li**

8:50 . Isothermal calorimetry to resolve site specific thermodynamics on CdSe ‘magic’-sized nanocrystals. **M. Islam**, G.A. Drake, A.B. Greytak

9:05 . What dictates polytypes in colloidal synthesis: Surface energy or kinetics?. A. Peng, **J. Macdonald**

9:30 . Shape effect of colloidal semiconductor nanocrystals. **Y. Kim**

9:55 . Withdrawn

10:10 . Structure, elemental distribution, and electronic spectra of compositionally complex nanocrystals revealed by scanning transmission electron microscopy. **B.F. Hammel**, L.M. Hall, L.M. Pellows, O.M. Pearce, P. Tongying, S. Yazdi, G. Dukovic

Sheraton Denver Downtown Hotel
Governor's Square 14

2D Materials & Interfaces: Theory, Fundamentals & Applications

Graphene & HOPG

S. Claridge, R. M. Espinosa-Marzal, *Organizers, Presiding*

8:00 . Withdrawn

8:30 . Characteristics of organometallic-functionalized graphene for enhancing carrier mobility. **K.N. Sharma**, M. Arzani, V. Berry

8:50 . Synthesis of N-doped Graphene by post-treatment method: Experimental and theoretical assessment. **M.A. Amezcua-Navarro**, J. Guerrero-Sanchez, R. Ponce-Perez, J.M. Romo-Herrera

9:10 . Fluorescent graphene oxide nanohybrids for sustainable immobilisation and conversion of organic dyes. **S. Pascu**

9:40 20 min intermission.

10:00 . Polymerized noncovalent monolayers on 2D materials: A foundation for nanostructured material design. **S. Claridge**

10:30 . 2D or not 2D? Using substrate interactions and mechanical strains to tune the chemical, tribological, and optoelectronic properties of graphene and MoS₂. **J. Batteas**

11:00 . Straintronics in 2D materials. **A. Van der Zande**

Sheraton Denver Downtown Hotel
Director's Row I

Interfacial Processes for Microplastics Removal from Water

Cosponsored by ENVR[‡] and PMSE

B. Bharti, A. Gutierrez, *Organizers*

S. McBride, F. Temprano-Coletto, *Organizers, Presiding*

8:00 Opening remarks.

8:10 . Microplastics capture and recovery with biodegradable self-dispersing soft microcleaners. **O.D. Velev**, H. Hong, R.S. Bang, L.V. Rivera

8:40 . Bio-inspired reusable design for microfiber filtration in aquatic environments. **L. Feng**, C. Ho, K.K. Park

8:55 . N-body simulations of microplastic removal using plant based polymers. R. Srinivasan, C. Mitchell, B. Wyatt, **S. Clingan**, M. Azadeh

9:10 . Oligomers are a major fraction of the released submicrometre particles released during washing of polyester textiles. **T. Yang**, Y. Xu, G. Liu, B. Nowack

9:25 Break.

9:40 . Fragmentation concepts explain nanoplastic formation and temporal persistence. **S. Kumar**

10:10 . Development and testing of millifluidic flow devices for characterization of microplastic formation and release in water. **L.V. Rivera**, L. Pal, O.D. Velev

10:25 . Quantifying the separation efficiency of diffusiophoresis: Application to microplastics. **F. Temprano-Coleto**, M. Louis, H.A. Stone

10:40 . Targeting microplastic fibers at the source to minimize downstream pollution. **A.J. Lobo**, C. Subban

10:55 . Eliminating microplastic fibre release through low-friction fabric finishes. **K. Golovin**

Sheraton Denver Downtown Hotel
Director's Row H

Surfaces & Interfaces in Chemical & Biological Systems: Symposium in honor of Hai-Lung Dai

Reactivity at Interfaces

E. Borguet, G. V. Hartland, T. Lian, *Organizers*
C. Pibel, *Presiding*

8:00 . Tip-enhanced Raman spectroscopy and imaging of plasmon driven demethylation reactions on flat and nanostructured metallic surfaces. **L.A. Velarde**, B. Rajapakse

8:30 . Reflection ultrafast electron diffraction: Probing photoinduced structural dynamics of materials and molecular assemblies at surfaces. **D. Yang**

9:00 . First principles insights into catalysis driven by clean electricity. **E.A. Carter**

9:30 . Chirality and optical activity: New twists on old topics. T.P. Regan, C.L. Craft, **P.H. Vaccaro**

10:00 . Inter-complex excitation energy transfer processes in Photosystems. **H. Tan**

10:30 . Intuitive atomic-ions-in-diatomic-molecules model for the electronic structure of MX molecules. **R.W. Field**, S.L. Coy

11:00 . Molecular view of water interfaces. **M. Bonn**

11:30 . Observing molecular transport through living cell membranes: Applying nonlinear optics to solve biological problems. **H. Dai**

Interfacial Geochemistry of Layered Minerals

Geo 2D Materials

Sponsored by GEOC, Cosponsored by COLL and ENVR

SUNDAY AFTERNOON

Sheraton Denver Downtown Hotel
Director's Row E

Nanohybrid Materials for Diverse Applications

N. Feliu Torres, A. Mews, W. J. Parak, *Organizers*
H. M. Mattoussi, *Presiding*

2:00 . Withdrawn

2:20 . Hydroxyapatite nanowire-based piezoelectric film for ultrasonic electroporation-induced drug delivery. **N.R. Jana**

2:40 . Withdrawn

3:00 . Approach to make an adaptive immunoassay to detect an unknown virus variant. **J. Mata Calidonio**, A. Maddox, K. Hamad-Schifferli

3:20 . About mapping the protein corona around endocytosed nanoparticles. **W.J. Parak**

Sheraton Denver Downtown Hotel
Governor's Square 15

Biomaterials & Biointerfaces

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

2:00 . Attempt of SERS Imaging of cytoskeletal protein reconstruction of vulvar cancer. **K. Yokoyama**, J. Lewis

2:20 . Modulation of lipase and phospholipase-mediated degradation of lipid and amphiphilic esters self-assemblies. S.A. Khan, T. Rifat, **M.A. Ilies**

2:40 . Hollow organosilica beads: A novel reference material for the flow cytometry analysis of extracellular vesicles. **Z. Varga**, M. Palmai, A. Gaal

3:00 . Engineering liquid-liquid phase separation to control microstructure and micromechanics in biomaterials. **L. Li**

3:20 . Peptoid nanosheets for modifying in vitro cell behavior by physical interactions. M. El Yaagoubi, M.G. Merrilees, P.M. Tsimbouri, E.A. Ross, A. Jawed, M.J. Dalby, **A. Lau**

3:40 . Withdrawn

4:00 . Design of versatile hybrid nanoparticles as cancer therapeutics. **B. Iyisan**

Sheraton Denver Downtown Hotel
Governor's Square 17

Colloidal Semiconductor Nanocrystals (Including Perovskite Nanocrystals)

Synthesis of Functional Nanocrystals

G. Jia, J. Macdonald, X. Yang, *Organizers*
S. Jeong, *Organizer, Presiding*

2:00 . Precision colloidal synthesis: How far can it take us in realizing advanced quantum light sources?. **J.A. Hollingsworth**

2:25 . Interface nucleophilic substitution reaction-driven precise growth of Ag₂Te quantum dots. **A. Liu, Z. Li, D. Pang**

2:50 . Investigating the nucleation and growth of MAPbBr₃ perovskite nanocrystals using in situ spectroscopic techniques. **L. Nawab, D. Nuñez, C.Y. Wong**

3:05 . Varying synthesis conditions to control and study the complex structural-optical property relationships in quaternary copper-indium-(zinc)-chalcogenide quantum dots. **C.D. Heyes**

3:20 . Synthetic strategies to lower the barrier for making high quality quantum dot probes. **H. Han**

3:45 . Anisotropic semiconductor nanocrystal quantum dots: From syntheses to properties and applications. **G. Jia**

Sheraton Denver Downtown Hotel
Governor's Square 16

Basic Research in Colloids, Surfactants & Interfaces

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

2:00 . Tailoring colloid-hydrogel interfaces for optoelectronic applications. **S.V. Roth**

2:20 . Thermal and mechanical properties of molecular gels derived from *N*-phenyl and *N*-phenylalkyl octadecanamides: Effect of halogen and hydroxy substituents on the phenyl ring on the gelation properties.. **A. Mallia**

2:40 . Withdrawn

3:00 . Increasing the hydrolytic stability of superspreading trisiloxane surfactants. **B. Jun, T.J. McCarthy**

3:20 . Interfacial molecular organization assisted by switchable surfactant self-assembly: Implication to tunable emulsion stability. **T. Ambagaspitiya, D.J. Garza, E. Kubacki, A. Knight, K.A. Cimat**

3:40 . Withdrawn

4:00 . Enhanced contact flexibility from nanoparticles in capillary suspensions. L. Liu, J. Allard, **E. Koos**

4:20 . Exploring the size limit of lateral capillarity in interfacial assembly processes. **S. Park**, A. Liu

4:40 . Illuminating the impact of solvent and particle properties on optical manipulation of colloidal nanomaterials. **B. Reynolds**, M. Crane

Sheraton Denver Downtown Hotel
Director's Row I

Frontiers & Challenges in Nanoparticle-Mediated Chemical Transformations

Nanoparticle Synthesis & Characterization

W. Huang, Y. Sun, J. Zhao, *Organizers, Presiding*

2:00 . Probing structural evolution of nickel-based nanocatalysts during oxygen evolution reaction. **J. Chen**

2:30 . Antagonistic colloidal systems: Catalysts for innovation in catalysis. **S. Dai**

3:00 . Finding the true active site: Computational studies of dynamic evolution and site heterogeneity of Cu-based nanocatalysts for CO₂ reduction. **C. Liu**, J. Xu

3:30 . Synthesis and catalytic properties of high entropy alloy nanoparticles. **R.E. Schaak**

4:00 Break for 20 minutes.

4:15 . Icosahedron-derived Pt nanocrystals with enhanced activity and durability toward oxygen reduction. **Y. Xia**

4:45 . Application of X-ray spectroscopy on colloidal nanoparticles. **C. Sun**

5:15 . Parallel electrodeposition of nanoparticles: Accelerating materials discovery and synthesis design. **M.L. Personick**, A. Jallow, G.C. Halford, L.A. Baker

Sheraton Denver Downtown Hotel
Governor's Square 14

Interfacial Processes for Microplastics Removal from Water

Cosponsored by ENVR[‡] and PMSE

B. Bharti, A. Gutierrez, *Organizers*

S. McBride, F. Temprano-Coletto, *Organizers, Presiding*

2:00 Opening remarks.

2:10 . Aggregation of microplastics with biogenic particles in turbulent flows. **M. Rahmani**, M. Rezaeian, F. Pizzi, L. Cruanyes

2:40 . Withdrawn

2:55 . Modeling the impact of biofouling on regional scale microplastic transport. **L. Sunberg**, J. Moriarty, M. Moulton

3:10 . Microplastics accumulation on liquid impregnated surfaces. **S. McBride, J. Patel**

3:25 Break.

3:40 . Affinity of inorganic and organic contaminants of concern onto microplastics. R. Cai, J. Scott, D. Thennakoon, J. Quiambao, K. Hess, S. Johnston, E. El Hayek, A. Nouredine, A.S. Ali, M. Spilde, A. Brearley, P. Lichtner, K.J. Howe, M. Minghetti, J.M. Cerrato, **J. Gonzalez Estrella**

4:10 . Nanoplastic interactions with proxy Ocean and aerosol surfaces: molecular-level structural changes. **S. Proma**, H.C. Allen

4:25 . Enhanced nanoplastic separation and detection in agarose using viscoelastic-thermal spiral microfluidics coupled with Raman imaging analysis. **L. Gong**, B. Varela, S. Kipper, I. Andreu, Y. Lin

4:40 . Dyeing to know: Optimizing solvents for Nile red fluorescence in microplastics analysis. **D. Ho**, J. Masura, M. Sarmadi

4:55 . Imaging techniques to detect and localize microplastics and nanoplastics in complex environmental samples. **N. Tufenkji**, J. Macairan, F. Li, B. Nguyen

Sheraton Denver Downtown Hotel

Director's Row H

2D Materials & Interfaces: Theory, Fundamentals & Applications

TMDs

S. Claridge, R. M. Espinosa-Marzal, *Organizers, Presiding*

2:00 . Designing and probing exciton quantum phase transitions in two-dimensional semiconductors. **Y. Bai**

2:30 . Withdrawn

2:50 . Modulating optical and electronic properties of Indium Selenide (In_xSe_y) compounds using polymer-based iongel gating. **M. Sharma**, S. Shi

3:10 . Exciton tuning at the interface of 2D transition-metal dichalcogenides with molecular lattices. **T.J. Kempa**, R. Dziobek-Garrett, Y. Zhu, D. Weiss, K. Kingsbury

3:40 . Strain-exciton coupling in two-dimensional semiconductors. **S. Nam**, J. Kim, P. Ma, S. Kwon

4:10 10 min intermission .

4:20 . Tuning hyperbolic phonon polariton dispersion in MoO_3 . **J.J. Schwartz**, J. Schultz, D.S. Jakob, S. Krylyuk, A. Davydov, A. Centrone

4:50 . Elucidating the impact of the dielectric environment on excitons and trions in 2D semiconductor electrodes. **A.P. Tews**, R. Almaraz, J. Sambur

5:10 . Withdrawn

5:30 . Withdrawn

Zoom

Virtual Session

Global Virtual Symposium on Chemical Nanomotors: Frontiers & Opportunities

Collective Behaviors of Nanomotors

K. R. Chaturvedi, N. Jha, P. Johri, S. Maiti, W. Wang, *Organizers, Presiding*

9:30 . Enzyme motors and pumps: From transport to collective behavior. **A. Sen**

10:00 . Active colloidal assembly and active material. **J. Tang**, J. Zheng, C. Wu, J. Chen

10:20 . Emergent dynamics due to chemo-hydrodynamic self-interactions in active polymers. M. Kumar, A. Murali, A.G. Subramaniam, R. Singh, **S. Thutupalli**

10:40 . Intelligent colloidal motors and their collective behaviors. **F. Mou**, J. Guan

10:55 . Motility and pair-wise interactions of chemically active droplets in 1-D confinement. **P. Kumar**, P. Dwivedi, S. Ashraf, D. Pillai, R. Mangal

11:05 . Dye-sensitized active colloids: from reversible phototaxis to optically guided dynamic assemblies. **J. Chen**, J. Tang

11:15 . Interactions in active colloids. **K. Singh**, R. Mangal

11:25 . Water powered Cu@MoS₂ micromotor swarm for a collaborative oscillation of living cells. **C. Gao**

SUNDAY EVENING

Colorado Convention Center
Hall A-C

2D Materials & Interfaces: Theory, Fundamentals & Applications

S. Claridge, R. M. Espinosa-Marzal, *Organizers*

7:00 557. Construction and stability study of Janus nano-armored foam system. **Z. Gao, Z. Dong, Z. Yang**

7:00 558. Surface binding constant and kinetics of organic pollutants onto 2D MXene. **S. Debow**, H. Fisher, M. Liebes, J. Brown, M. Mirotznik, R.L. Opila, **Y. Rao**

7:00 559. Evaluating isotopic effects on in-plane hyperbolic phonon polaritons in MoO₃ with nanoscale IR imaging. **J. Schultz**, S. Krylyuk, J.J. Schwartz, A. Davydov, A. Centrone

7:00 560. Highly conductive surface grafted elastomer with roughed wrinkles for Multi-functional Wearable Devices. **q. yang**

7:00 561. Engineering ZIF-8 thin films for corrosion protection of metal surfaces. **P. Najmi**, M. Arjmand

7:00 562. Noval synergetic bonding functionalization of hexagonal boron nitride with organometallic compounds. **K.N. Sharma**, N.K. Dandu, V. Berry, A. Ngo

7:00 563. DFT studies of N-heterocyclic carbenes absorbed to single atom alloys: Possible hydrogen storage pathways. **S. Simpson**

7:00 564. Investigation of biofouling resistant PES UF membranes doped with $\text{MnFe}_2\text{O}_4/\text{g-C}_3\text{N}_4$ (2D nanocomposite). **Y. Manawi**, I. Almanassra, M. Hussien

Colorado Convention Center
Hall A-C

Active & Responsive Matter

B. Bharti, S. Kamdar, *Organizers*

7:00 565. Active capsule driven by collective motion of self-propelled particles. **H. Wu**

7:00 566. Improving magnetorheological fluid performance through fundamental analysis. **E. Johnson**, S. Thiagarajan, A. Koh

7:00 567. Microfluidic mixing assembly of temperature-responsive giant unilamellar vesicles from amphiphilic triblock copolymers for controlled transformations. **S. Nealy**, V.A. Kozlovskaya, M. Dolmat, E.P. Kharlampieva

7:00 568. Complete pH-dependent shape recovery in cubical hydrogel capsules after large deformations. **V.A. Kozlovskaya**, E.P. Kharlampieva

Colorado Convention Center
Hall A-C

Advanced In-Situ Imaging Methods for Colloidal Chemistry: Probing Interaction & Dynamics at the Nanoscale

Advanced Imaging Methods for Nanoscale Colloidal Interactions & Dynamics

Q. Chen, D. Li, Y. Xie, *Organizers*

7:00 510. Metastable palladium hydrides using aromatic liquids in graphene liquid cell. **E. Lee**, J. Bae, K. Lee, D. Chun

7:00 511. Observing molecular transport through living cell membranes in real time by nonlinear optical spectroscopy and microscopy. **G. Purnell**

7:00 . Withdrawn

7:00 . Withdrawn

7:00 **512.** Extracting and tracking dynamic anisotropy changes of plasmonic nanoparticles using CLoCK microscopy. **I.S. Jayalath**, S. Shukla, V. Sundaresan

Colorado Convention Center
Hall A-C

Advances in Machine Learning & Physics-Based Modeling for Colloidal Materials

R. Marson, D. Miller, J. D. Moore, V. Prasad, L. Qi, T. Wang, D. Yu, *Organizers*

7:00 **598.** Coarse grained computational chemistry of cyclodextrin based emulsions. **S. Vyas**, Y.L. Wang, J.A. Bikker

7:00 **599.** Raman spectroscopic studies of model cell membranes and their modifications. **C. Poust**, **E. Andersen**, S. Lee

Colorado Convention Center
Hall A-C

Basic Research in Colloids, Surfactants & Interfaces

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

7:00 **381.** Transparent structural composite anti-fogging coating with mechanical abrasion robustness and environmental durability. **Y. Hu**, **Z. Dong**, **Z. Yang**

7:00 **382.** Preparation and properties of gas diffusion layer with stable superhydrophobic properties. **H. Yang**, **K. Xu**, **Z. Yang**

7:00 **383.** Roles of amino acids on CO₂ hydrate formation for CO₂ capture and storage. **P. Rangsunvigit**

7:00 **384.** Modeling of partitioning coefficients and cloud points of hydrocarbon soluble surfactants. **D. Yu**, A. Katiyar, T. Knight

- 7:00 385.** Non-invasive wearable enzymatic sweat glucose utilizing aluminum-doped zinc oxide film on flexible polyimide film. **W. Wu**, T. Wei, F. Ko
- 7:00 386.** Nonlinear optical study of the effect of exogenous glucose on membrane permeability in living bacterial cells. **X. Hu**, H. Dai
- 7:00 387.** Sensitivity of microemulsion structure upon surfactant hydrogen bond strength. **S. Banerjee**, A.E. Clark
- 7:00 388.** Structural determination of model phospholipid membranes by ATR-FTIR spectroscopy. **M. Panella**, S. Lee
- 7:00 389.** Lipid bilayer thermodynamics and its interactions with bioactive molecules: A DSC study. **A. Rabadi**, S. Lee
- 7:00 390.** Interfacial tensiometry of bioactive molecules with model membranes. **J. Fosella**, S. Lee
- 7:00 391.** Exploring the electrical characteristics of model lipid membranes. **C. Scott**, S. Lee
- 7:00 392.** Development of multi-functionalized liposomes with high affinity for target proteins for intracellular protein delivery. **M. Watanabe**, H. Koide, S. Hirata, T. Dewa, N. Oku, T. Asai
- 7:00 393.** Influence of multiple thermal phase transition cycles and room temperature aging on the texture of nematic 5CB thin films. **I. Sahoo**, S. Hazra, R. Mukherjee
- 7:00 394.** Direct observation of the lateral nanoparticle dynamics at the vertical water: Oil interface by single-particle fluorescence microscopy. **K. Tran Ba**, M. McDonald, M. Crimmins
- 7:00 395.** Morphology modification in PS/PMMA polymer blend thin films induced by CdS QDs. **H. Kumar**, R. Mukherjee, P. Banerji
- 7:00 396.** Insight into the correlation between wettability and dissolution of calcite in ion-free water: a multi-scale approach. **M. Almahri**, S. Al Hassan, M. Chiesa, J. You Lu
- 7:00 397.** Effect of surfactant characteristics on the phase transition and morphological structure of thermoresponsive polysaccharide biomaterials. **S. Bubli**, R. Lima, K. Salvatore, S. Kamath, Z. Yang, L. Li
- 7:00 398.** Investigating membrane barrier properties via water permeability in model bilayers. **M. Herrera**, **J. Said**, S. Lee
- 7:00 399.** Effect of surface wettability on the dewetting of ultrathin polymer films via immersion in solvent non solvent mixture. **A. M G**, R. Mukherjee

7:00 400. Probing lipid membrane structures via confocal Raman microspectroscopy. **W. Perla**, J. Giancaspro, S. Lee

7:00 401. Sub-wavenumber high resolution multimodal nonlinear spectroscopy platform for spectroscopy, structure and dynamic interactions in environmental and biological studies. **Z. Li**, H. Wang

7:00 402. Time and frequency resolved infrared free induction decay (IR-FID) of non-interfacial origin observed in the interfacial sum-frequency generation vibrational spectroscopy (SFG-VS). **B. Zhao**, H. Wang

7:00 403. Competitive adsorption and dissociation of methanol and water on the buried amorphous TiO₂/methanol and TiO₂/water solid/liquid interface probed with sum frequency generation vibrational spectroscopy. **S. Yang**, J. Cao, H. Wang

7:00 404. Thermodynamics of CTAB and sodium fatty acid salts surfactant mixtures: Micelle-to-Vesicle transition. **S. Rajkhowa**

7:00 405. Withdrawn

Colorado Convention Center
Hall A-C

Biomaterials & Biointerfaces

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

7:00 406. Self-assembled hyaluronic acid nanoparticles for oral delivery of deferoxamine. **E. Agboluaje**, S. Cui, N.J. Grimsey, M. Xiong

7:00 407. Bioactive Hyaluronic acid - Protein based amyloidogenic hydrogel dressing for rapid diabetic wound healing via enhanced angiogenesis and anti-inflammation. **K. Naik**

7:00 408. Utilizing AFM imaging and advanced image analysis to probe flexibility in fibrillar nucleic acid based nanostructures. **A. Lushnikov**, J. Navas Hernandez, J. Henry, D. Svechkarev, Y. Radwan, K. Afonin, **A. Krasnoslobodtsev**

7:00 409. Cell-free synthesis of membrane-associated Protein (PspA) and its effect on liposome membrane deformation. **H. Tu**, S. Herianto

7:00 410. Biomolecular nanocrystals for capture of miRNA. **C. Slaughter**, C.D. Snow

7:00 411. Formulation, optimization, and application of a biologically derived edible white spray paint. **M.R. Wasilewski**, L. Deravi, P. Sullivan

7:00 412. 3D printing of biohybrid silica composites. **O. Pear**, D. Moss, A. Khakhar, R. Bay

7:00 413. Enhanced one-pot cascade performance using enzyme-stabilizing lipid bilayers. **D.J. Kelaita**, D.K. Schwartz, J. Kaar

7:00 446. Egg white derived N-doped porous carbon interlayer for improved electrochemical performance of lithium-sulfur batteries. **J. Choi**, H. Lee

7:00 447. Aqueous vs non-aqueous peptide assembly. **A. Dey**, R. Ulijn

7:00 448. Design of self-assembled protein Influenza vaccines for older and immunosuppressed populations. **S. Wimberley**, J. Park, J. Champion

7:00 449. Multifunctional hydrogel with fish gelatin/oxidized hyaluronate for promoting diabetic wound healing. **D. Park**, S. Kim, W. Jung

7:00 450. Polymeric self-assembled nanoparticles for the study of transmucosal delivery. **K. Cureno Hernandez**, J. Lee, S. Kim, Z. Cartwright, M. Herrera-Alonso

7:00 451. Computational protein design for a novel porous DNA-protein co-crystal. **E. Magna**, C.D. Snow

7:00 452. Molecular dynamics study of interfacial adhesion between barnacle cement protein and polymer materials. **A. Arshad**

7:00 453. Ultrasound responsive injectable hydrogels for on-demand drug delivery. L. Xiang, **G. Sener**, A. Yildirim

7:00 454. Targeting three-dimensional bioprinted tumors using newly designed receptor targeting peptides. **M. Biggs**, M.E. Murray, **I.A. Banerjee**

7:00 455. Cellulose-based zwitterionic bottlebrush polymers for DNA delivery into plant roots. **Z. Cartwright**, J. Lee, K. Cureno Hernandez, S. Kim, M. Herrera-Alonso

Colorado Convention Center
Hall A-C

Colloid & Surface Chemistry in Energy & Sustainability

M. Karayilan, C. Wirth, *Organizers*

7:00 . Withdrawn

7:00 **569.** Comparison of anion exchange resins for sodium fluorescein removal through UV-Vis spectroscopy. **P. Hatley**, J.C. Poler

7:00 **590.** Sugar watts: A sweet solution to a sour problem. **R. Stanley**, N. Pringle, W. Paxton

7:00 **591.** FeOCl nanoparticle-embedded mesocellular carbon foam as a cathode material with improved electrochemical performance for chloride-ion batteries. **C. Zhang**

7:00 **592.** Enhanced lithium-ion diffusion by lignin nanoparticles-dispersed electrolytes to suppress the lithium dendrite. **N. Arabzadeh Nosratabad**, S. Xu, Q. Li, Y. Xing, C. Wan, J. Lee

7:00 **593.** Infrared spectroscopic study of surface modification of cellulose nanofibers using silanes in the gas phase and in supercritical CO₂. **V.H. Senevirathne**, C. Tripp, M. Tajvidi

7:00 **594.** Optimizing water-repellent coatings of superhydrophobic surfaces for efficient atmospheric water harvesting. J. Song, **H. Deng**, K. Yeung

7:00 **595.** Tuning semiconductor nanocrystal geometry to drive C-C bond formation in a biohybrid system. **B. Hohman**, H. Keller, H. Hamby, A. Weitz, S.J. Elliott, G. Dukovic

7:00 **596.** Synthetic biodegradable wax, an alternative approach to the conventional petroleum-based plastics in packaging. **A. Khan**, M. Rabnawaz

7:00 **597.** MOF derived Co(OH)₂ nanoarrays anchored with highly dispersed IR nanoparticles for efficient overall water splitting. **X. Yang**

Colorado Convention Center
Hall A-C

Colloidal Nanoparticles in Materials Synthesis

M. R. Jones, R. Macfarlane, J. Millstone, *Organizers*

7:00 **513.** Securing flexible substrates with au nanoparticles. **S.E. Gorski**, T. Ram Ramesh, S. Skrabal

7:00 **514.** Reconfigurable optical properties of anisotropic gold/iron oxide nanohybrids. **H. Kang**, S. Park

7:00 515. *In situ* optical microscopy of electroless metal deposition reactions on polymer interfaces towards discrete functional particle synthesis. **G.P. Alvarado Munoz**, T. Papenmeier, S.K. Conlin, R. Coridan

7:00 516. Rigid CuInS₂/ZnS Core/shell quantum dots for high performance infrared light-emitting diodes. **Z. Liu**, X. Li, O. Chen

7:00 517. Evaluation of PLGA nanoparticles for aptamer cellular uptake and gold nanoparticles for targeted bioanalysis. **S. Thennakoon**

7:00 518. One-pot green synthesis of silver nanoparticles using *Ishige okamurae* extract for anticancer and antibacterial activity. **N. Kim**, W. Jung

7:00 . Withdrawn

7:00 519. Withdrawn

7:00 . Withdrawn

7:00 520. Dielectrophoretic assembly of customized colloidal trimers. **S. MUNKAILA**

7:00 . Withdrawn

7:00 521. Optimizing silica nanoparticle dispersion and electrolyte tailoring for electrophoretic deposition in organic and aqueous solvents. **S. Karmakar**, S.K. Mohanty

7:00 542. Lignin-induced click synthesis of Au, Ag, Pd, and Iron oxide nanoparticles and their nanocomposites in aqueous bulk and at the solid–liquid interface. **R. Kaur**

7:00 543. Synthesis and applications of mesoporous ni-phyllsilicate particles. **E. Cho**

7:00 544. Tetraalkylphosphonium ionic liquid-based metal nanoparticle composite coatings as novel antibacterial and anti-biofilm materials. **a. banerjee**, S. Dehghandokht, J.F. Trant, P. Kennepohl

7:00 545. Engineered interfaces for heterostructured intermetallic nanomaterials. **J. Yu**, Y. Yin, W. Huang

7:00 546. Nanoparticle conversion chemistry: Polyelemental nanoparticle formation from core-shell nanoparticles. **N. Kar**, M. McCoy, R. Selvaraj, S.E. Skrabalak

7:00 547. Colloidal synthesis of high entropy spinel oxide nanocrystals. **J.L. Rowell**, M. Kang, D. Yoon, K.Z. Jiang, Y. Jia, H.D. Abruna, D. Muller, R.D. Robinson

7:00 . Withdrawn

7:00 . Withdrawn

7:00 . Withdrawn

7:00 **548.** Chiroptical phenomena emerging in helical assemblies of metal and semiconductor nanoparticles. **W. Lewandowski**

7:00 **549.** Role of carboxylates in the phase determination of metal sulfide nanoparticles. **A. Shults**, G. Lu, J. Caldwell, J. Macdonald

7:00 **550.** Influencing cation hole filling in nickel sulfide nanocrystals using phosphine ligands. **E. Endres**, J. Macdonald

7:00 **551.** Discovery of new nanomaterials by artificial intelligence controlled synthesis with real time characterization. **A. Poerwoprajitno**, D. Huber

7:00 **552.** Reversible assembly of virus-like particles (VLPs) into protein macromolecular frameworks (PMFs). P. Medina, R. Fukazawa, A. Arora, K. McCoy, E. Selivanovitch, B. Lee, T. Douglas, **M. Uchida**

7:00 **553.** Colloidal oxide chemistry for 3D printing glass materials. **J.F. Destino**, S. Cayo, R. Vires, N. Tobin, S. Luna, A. Fernandes, A.R. Carr, R. Wayne

7:00 . Withdrawn

7:00 **554.** Withdrawn

7:00 **555.** Withdrawn

Colorado Convention Center
Hall A-C

Colloidal Semiconductor Nanocrystals (Including Perovskite Nanocrystals)

Synthesis, Characterizations & Applications

G. Jia, J. Macdonald, X. Yang, *Organizers*
S. Jeong, *Organizer, Presiding*

7:00 **606.** The role of surface functionalization in quantum dot-based photocatalytic CO₂ reduction: balancing efficiency and stability. **F. Hernandez**, M. Yang, N. Nagelj, A. Lee, H. Noh, K. Hur, X. Fu, C. Savoie, A. Schwartzberg, J.H. Olshansky

7:00 607. Withdrawn

7:00 608. Synthesis and applications of two dimensional lead-free double perovskite nanoplatelets. **Z. Liu**, O. Chen

7:00 . Withdrawn

7:00 609. Quantum dot light absorbers and transition metal catalysts for photodriven CO₂ reduction. **M. Yang**, Y. Sulima, J.H. Olshansky

7:00 610. Pb-free colloidal quantum dot layers in thin-film photovoltaic architectures. **Y. Park**, S. Jeong

7:00 . Withdrawn

7:00 631. Size control of copper indium sulfide semiconductor nanocrystals using substituted thioureas. **T.H. Edmunds**, S. Hughes

7:00 633. Slow hot electron cooling in negatively charged CdS quantum dots. **S. Sherman**, K.E. Shulenberger, H. Keller, G. Dukovic

7:00 635. Modulating the kinetics of photoinduced charge separation and charge recombination of CsPbBr₃ perovskite nanocrystals through ligand-shell Engineering. A.S. Malinoski, **C. Wang**

Colorado Convention Center
Hall A-C

Frontiers & Challenges in Nanoparticle-Mediated Chemical Transformations

W. Huang, Y. Sun, J. Zhao, *Organizers*

7:00 556. Preparation of photoactive lipid-nanoparticle assemblies containing hydrophobic gold nanoparticles and dye molecules. **A. Nerhus**, D. Bravo, J. Mulvey, G.D. Palma, J.P. Patterson, Y. Shon

Colorado Convention Center
Hall A-C

Fundamental Research in Colloids, Surfaces & Nanomaterials

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

7:00 497. Evaluation of dielectric breakdown strength of Aluminum doped ZnO and CuO nanoparticles using spin coating method. **P.G. Jamdade**, S.G. Jamdade

7:00 498. Adsorption of methanol from supercritical carbon dioxide onto alkyl-ligand modified chromatographic surfaces. **S. Zakhia**, C. Chang, H. Liu, J.P. Grinias, M.R. Schure, S.A. Schuster, J.I. Siepmann

7:00 499. Introducing chemical heterogeneity in polymer grafted nanoparticles. **T. Chen**, T. Xu

7:00 500. Studying pinch-off dynamics of water in the presence of various concentrations of Perfluorooctanoic acid surfactant. **B. Valipourgoodarzi**, M. Zhou, R. Foudazi

7:00 501. Colloidal synthesis of CoF-300 particles with sterically hindered benzoic acid catalysts. **J. Johnson**, A. Mojica, Z. Jackson Delos Angeles, D. Kim, L. Hamachi

7:00 502. Small molecule studies on imine bond formation equilibria relevant to the formation of colloidal CoF-300 covalent organic frameworks. **H. Negri**, H. Ankrum, L. Hamachi

7:00 503. Colloidal COF pigments in water-based latex coatings. **S. Ottoes**, S. Tinkle, L. Hamachi

Colorado Convention Center
Hall A-C

Interfacial Phenomena & Dynamics in Electrochemical Systems

J. Frechette, M. A. Gebbie, A. Gupta, *Organizers*

7:00 603. Exploring Ca²⁺ ions induced electron transfer by SECM. **Z. Chen**, **A. Fan**, **H. Shao**

7:00 604. Surface chemistry of MAX phase edges under electrochemical conditions. **V. Nesterova**, K. Klyukin

7:00 605. Predicting ion concentration and potential profiles in multicomponent electrochemical cells: A comprehensive model including electrical double layers, bulk region, and redox reactions. **G. Origer**, N. Jarvey, A. Gupta

Colorado Convention Center
Hall A-C

Nanohybrid Materials for Diverse Applications

N. Feliu Torres, A. Mews, W. J. Parak, *Organizers*

7:00 504. Fluorous phase oxygen optical nanosensor for overcoming metabolite interference in microbial systems. **J. Branning**, T. Sodja, A. Mendonsa, K.J. Cash

7:00 505. Withdrawn

7:00 506. Advancing spinal cord injury repair: A particle-embedded hydrogel for sustained antifibrotic release. **X. Li**, F. Rossi, M.S. Shoichet

7:00 507. Ultrasound-responsive and drug conjugated nanoparticles for multimodal therapy of solid tumors. L. Xiang, M. Henderson, S. Drennan, J. Fischer, **A. Yildirim**

7:00 508. Synthesis and characterization of chitosan/peg modified mesoporous silica drug carrier to improve bacterial efficacy of rifaximin. **A. Bano**, N. Iqbal, D. Asif Raja, M. Bhanger, M. Malik

7:00 . Withdrawn

7:00 509. Nanoparticles enabled isolation and enrichment of endogenous AMPK protein complexes for top-down mass- spectrometry analysis. **M. Wang**, H. Chan, B. Krichel, E.A. Reasoner, Y. Ge, S. Jin

Colorado Convention Center
Hall A-C

Nanomaterials

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

7:00 456. Phase behavior and nano-mechanical properties of polymer grafted nanoparticles blends thin film. **A. Gul**

7:00 457. Recoverable core-shell Fe₃O₄ nanocubes coated with niobium-doped TiO₂ for photocatalytic degradation of antibiotics from wastewater. **M. Ariza Gonzalez**, T. Lee, D. Rodrigues

7:00 . Withdrawn

7:00 458. Polyimide shape-memory polymers with embedded carbon nanotubes and magnetic nanoparticles for high-temperature warning systems. **R. Islam**, T. Lee

7:00 459. Tailoring surfaces of magnesium ferrite nanoparticles for enabling selective adsorption of anionic and cationic dyes from single-component and binary solutions. **S. Hoijang**, S. Ananta, T. Lee, L. Srisombat

7:00 460. Withdrawn

7:00 461. Barium titanate/PVDF nanofiber composites for enhanced piezoelectric sensors and nanogenerators via electrospinning. **J. Lee**, N. Kim, J. Ryou, T. Lee

7:00 462. Synthesis of silicon nanoparticles passivated by organic ligands via Reactive High Energy Ball Milling (RHEBM): A potential method for crude oil fractionation. **E.A. Flores**, J.P. Vanegas

7:00 463. Quantum shell in a shell: Engineering colloidal nanocrystals for a high-intensity excitation regime. **J. Huang**

7:00 464. Decoupling particle shape and magnetic field alignment with chained magnetic nanoparticles. **H. Tomazin**, C. Kemper, W. Shields

7:00 465. Poly(vinylidene difluoride-*co*-hexafluoropropylene) (PVDF-HFP)/ Al-doped $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ (Al-LLZO) composite polymer electrolyte for solid state lithium ion batteries. **P. Hauck**

Colorado Convention Center
Hall A-C

Recent Development of Polymer Interface & Polymer Thin Film Preparation, Characterization & Modeling

Polymer Interfaces & Thin Films

Z. Chen, T. Kuo, T. Wei, *Organizers, Presiding*

7:00 600. Chitosan-based hydrophilic color-changing nanofilm for temperature sensing. **M. Kashem**, W. Li

7:00 601. Plasma polymerization of carvone at atmospheric pressure: a potential method for antimicrobial coatings. **A. Masood**

7:00 602. Molecular surface and interfacial structures of PDMS incorporated with silicone oil. **F. Gomez**, D. Rossi, M. Safaripour, D.C. Webster, Z. Chen

Colorado Convention Center
Hall A-C

Surface Chemistry

H. Cornell, C. R. Kasprzak, A. V. Teplyakov, L. Tribe, *Organizers*

7:00 466. Withdrawn

7:00 467. Anticorrosive performance of dipyriddy disulfide on brass surfaces in acidic solution: Electrochemical and X-ray photoelectron studies. **T.D. Golden**, D.J. Karunaratne

7:00 468. Atomic layer deposition of ruthenium using novel precursor. **C. Nguyen**, S. Kim, A. Yanguas-Gil, A. U. Mane, **J. Elam**

7:00 469. Fluorinated self-assembled monolayers as nanoscale coatings. **R. Amarasekara**, T. Lee

7:00 470. Electrochemical method to generate gradient-based high throughput screening assay. **S. Maparathne**, Q. He, R. An, T. Lee

7:00 471. Efficient and robust nanoparticle patterned assembly via self-assembled monolayer-controlled solvent dewetting. **S.G. Rao**

7:00 472. Possible structures of molecular corks for advancements in hydrogen storage. **L. Crane**, S. Simpson

7:00 473. Investigating the impact of iron and aluminum salts on the electric field of the air-water interface using surface potential. **G. Gattermeir**, B. Biswas, N. Adhikari, H.C. Allen

7:00 494. Preserving enamel integrity: Non-invasive Rochelle salt whitening treatment. **A. Ivanova**

7:00 495. Effects of different sugars used as carbon sources in growth media containing iron and selenium on media protein content, mycelia surface friction, and chitin content, in the model fungus *Penicillium fellutanum*. **A. Potter**, **J. Pitt**, M.R. Wisniewski, L.W. Selakovich, S.L. Wheeler, **J. Carsella**

7:00 496. Effect of crystal facets on the performance of Pt single-atom catalysts coordinated with ligands supported on shape-engineered TiO₂ in the Water-Gas Shift reaction. **F. Rezvani**, S.L. Tait

MONDAY MORNING

Zoom
Virtual Session

Global Virtual Symposium on Chemical Nanomotors: Frontiers & Opportunities

Nanomotors in Complex Environment

K. R. Chaturvedi, N. Jha, P. Johri, S. Maiti, W. Wang, *Organizers, Presiding*

5:30 . Supramolecular colloidal motor. **Q. He**

6:00 . Chemically powered nanobots: swimming nanoparticles for biomedicine. **S. Sánchez**

6:30 . Colloidal dynamics in active crowded environments. **K. Dey**

6:45 . Chemotactic behavior for a self-phoretic Janus particle near a patch source of fuel. V. Mancuso, M.N. Popescu, **W. Uspal**

7:00 . Withdrawn

7:15 . Chemical micromotors move faster at oil-water interfaces. **J. Liu**, W. Wang

7:25 . Droplet oscillation and motion: an interplay of surfactant partitioning, spontaneous emulsification, and substrate wettability. **S. Krishna Mani**, S.N. Al-Tooqi, J. Song, A.A. Sapre, L.D. Zarzar, A. Sen

7:35 . Designing athermal disordered solids with automatic differentiation algorithms. **M. Zu**, C. Goodrich

7:45 . Withdrawn

Sheraton Denver Downtown Hotel
Governor's Square 15

Colloidal Semiconductor Nanocrystals (Including Perovskite Nanocrystals)

Semiconductor Nanocrystals for Efficient Device Applications

Cosponsored by COLL

J. Macdonald, X. Yang, *Organizers*

S. Jeong, G. Jia, *Organizers, Presiding*

8:00 . Quasi-2D perovskite nanocrystalline films for light emitting devices. **W. Nie**

8:25 . Pathway of room-temperature formation of CdSeS magic-size clusters from mixtures of CdSe and CdS samples. **K. Yu**

8:50 . Designing substitutional dopant sites for efficient lanthanide doping in lead-free perovskite nanocrystals. **H. Lin, W. Zheng**

9:05 . Interface chemistry for nano-hybrid materials for electronics and opto-electronics. **S. Marder**

9:30 . Indium arsenide colloidal quantum dot photodetector achieving EQE of 80% by extending the absorber layer thickness employing volatile ink. **D. Shin, H. Jeong, J. Kim, Y. Park, S. Jeong**

Sheraton Denver Downtown Hotel
Governor's Square 16

Basic Research in Colloids, Surfactants & Interfaces

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

8:00 . Fundamental investigation of guest infiltration into metal-organic frameworks via Raman spectromicroscopy. **A. Devlin**

8:20 . Anchor plots: Predicting key features in emulsion phase diagrams using COSMO-RS interfacial tension calculations. **M. Andersson**

8:40 . Withdrawn

9:00 . Electrically driven deposition of quantum dot films without need for post-deposition processing. **T. Nakotte**

9:20 . Withdrawn

9:40 . pH-Responsive polyelectrolyte complexes of polymethacrylic acid copolymers. **P. Nikishau**, V.A. Kozlovskaya, E.P. Kharlampieva

10:00 . Incorporation of double hydrophilic diblock copolymers for stabilizing water-in-water emulsions. **H. Lee**, M. Kim

10:20 . Understanding multisite adsorption mechanisms on heterogeneous solid-liquid interface using second harmonic light scattering. **Y. Li**, M.J. Wilhelm, T. Wu, H. Dai

Sheraton Denver Downtown Hotel
Governor's Square 17

Biomaterials & Biointerfaces

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

8:00 . Withdrawn

8:20 . Design and fabrication of channelized nerve guidance conduits for peripheral nerve regeneration. **L. Hegde**, J. Perrelle, A. Boreland, F. Bedoui, Z.P. Pang, S. Murthy

8:40 . Investigating the impact of polymer chemistry and stiffness for Keratocyte cell adhesion towards artificial cornea. **R.P. Ramasinghe**, U. Erasquin, Y. Huang, M. Burdick, K.A. Cimat

9:00 . Delivery order of nanoconstructs affects intracellular trafficking by endosomes. **K. Lee**, T.W. Odom

9:20 . Withdrawn

9:40 . Withdrawn

10:00 . Biofilm-inspired underwater adhesives. **X. Huang**, S. Saluja, J. Yan

Sheraton Denver Downtown Hotel
Director's Row I

Nanomaterials

Nanosynthesis & NSRC Special Session: Advanced Characterization & Novel Probes

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

8:00 . General route to colloidally-stable, low-dispersity manganese-based ternary spinel oxide nanocrystals. **J.L. Rowell**, Y. Jia, Z. Shi, A. Molina Villarino, M. Kang, D. Yoon, K.Z. Jiang, H.D. Abruna, D. Muller, R.D. Robinson

8:20 . Biobased synthesis of silver nanowires. F. Liu, **S. Jiang**

8:40 . Newly discovered isomerization intermediates in cadmium chalcogenide magic-size clusters. R.P. Lynch, **R.D. Robinson**

9:00 . Metal-free “Click” approach to 1,2,3-Triazole-Based mesoionic carbenes and their corresponding metal nanoparticles. **M. Bélanger-Bouliga**, A. Nazemi

9:20 . Synthesis of trehalose-capped gold nanocluster Au₂₅Tre₁₈. **M. Yan**

9:40 . Understanding the formation of ferromagnetic CuCr₂Se₄ nanocrystals. **S. Harvey**

10:00 . Facile assembly of polymer-grafted nanoparticles into macroscopic materials. **M. Ye**, Y. Li, S.H. Ngo, M.S. Lee, A. Nishimura, R.L. Li, R. Macfarlane

10:20 . Sub-Ångstrom superresolution imaging with photon avalanching nanoparticles. **B.E. Cohen**

10:50 . Electron spectro-microscopy of 2D materials and surfaces. **J.T. Sadowski**

11:20 . *In situ* study of the structure and dynamics of nanoparticles in a dense colloid through rheo-SAXS-XPCS technique. **X. Lin**

Sheraton Denver Downtown Hotel
Governor's Square 14

Recent Development of Polymer Interface & Polymer Thin Film Preparation, Characterization & Modeling

Antifouling, Anti-icing & Polymer Coating

Z. Chen, T. Kuo, T. Wei, *Organizers, Presiding*

8:00 . Molecular level studies of zwitterionic polymer hydration and antifouling mechanisms. **Z. Chen**

8:30 . Amphiphilic additives to tailor the surface properties of coatings to mitigate the adhesion of marine fouling organisms. **D.C. Webster**, J. Dahlgren, J. Benda, A. Rahimi

9:00 . Creating functional polymer surfaces. **J. Genzer**

9:30 . Designing durable ice-shedding coatings. **A. Tuteja**

10:00 . Polymer coatings with designed architecture for biofouling prevention and energy storage. **R. Yang**

10:30 . Zwitterionic polymer interfaces for biomedical applications. **Z. Cao**

11:00 . Surface hydration and protein adsorption on zwitterionic polymers prepared using iCVD method. **G. Wu**, P. Chen, R. Yang, Z. Chen

11:20 . Atomistic study on the hydration and fouling resistance behaviors of hybrid amphiphilic and zwitterionic polymer surfaces. **X. Qin**, A. Chen, J. Fang, P. Sarker, M. Uline, T. Wei

Sheraton Denver Downtown Hotel
Director's Row H

2D Materials & Interfaces: Theory, Fundamentals & Applications

MXenes & Soft Interfaces

S. Claridge, R. M. Espinosa-Marzal, *Organizers, Presiding*

8:00 . Harnessing 3D water interfaces and biomimetics to pattern in 2D. A. Naranjo, M. Batista, E.M. Perez, **M.W. Rutland**

8:30 . Withdrawn

8:50 . Dissipative particle dynamics modeling of phospholipid monolayers at air-water interfaces: Temperature-dependent two-dimensional phase behavior and elastic properties. **K.P. Santo**, M. Iepure, J. Arredondo, Y. Min, A.V. Neimark

9:10 . Influence of 2D material-induced substrate periodicity on the preferential solvation of mixtures of linear and cyclic organic solvents and their tribological properties. **P. Nalam**, B. Rajapakse, T. Bui, B.H. Morrow, L.A. Velarde, J.A. Harrison, D.J. Schall

9:40 20 min intermission.

10:00 . Tuning semiconductor bandgap using occluded graphitic carbon. **M.M. Thuo**, A. Pauls, B.S. Chang, D. Jamagdni

10:30 . Synergistic assembly of MXene nanosheets and covalent organic frameworks with self-healing and enhanced anti-corrosion properties. **P. Najmi**, M. Arjmand

10:50 . Withdrawn

11:10 . Highly crystalline conductive two-dimensional hexaminobenzene-based metal-organic framework for the chemiresistive detection of nitric oxide. **H. Noh**, J. Seo, E. Cline, G. Benedetto, J. Baek, K. Mirica

11:30 . Atomic-resolution surface imaging under ambient conditions via conductive atomic force microscopy. **M.Z. Baykara**

Sheraton Denver Downtown Hotel
Director's Row E

Advances in Machine Learning & Physics-Based Modeling for Colloidal Materials

R. Marson, J. D. Moore, V. Prasad, T. Wang, *Organizers*
D. Miller, L. Qi, D. Yu, *Organizers, Presiding*

8:00 . Generative self-consistent field theory. **K.D. Dorfman**, P. Chen

8:30 . Multiscale modeling of solution formulations: from particles to fields. **M. Shell**, G. Fredrickson

9:00 . Molecular and data-centric modeling of the properties and interactions of functionalized nanoparticles in biological environments. **R. Van Lehn**

9:30 . Tribological effects of polymer-surfactant complexes on hair friction: Implications for hair care. **F. Rodriguez-Ropero**, E. Weiland, Y. Roiter, P. Koenig, S. Angioletti-Uberti, D. Dini, J. Ewen

10:00 . Understanding hierarchical structures within aqueous methylcellulose solutions using machine learning based CREASE scattering analysis and multiscale molecular dynamics simulations. **A. Jayaraman**, Z. Wu, A. Collins, S. Kronenberger

10:30 . Optical response mechanisms of DNA-carbon nanotube optical sensors to small molecule analytes investigated with molecular dynamics simulations and machine learning. **S. Chakraborty**, L. Vukovic, A. Krasley, A.G. Beyene

11:00 . Evaluation of bioderived solvents for polyvinyl chloride dehydrochlorination using an integrated off-lattice kinetic Monte Carlo (KMC)-molecular dynamics (MD) simulation framework. F.V. Olowookere, **C.H. Turner**

11:30 . Fluid particle dynamics simulations of colloidal Chemohydrodynamics in 3D. **D. Tree**, D. Banks

Zoom
Virtual Session

Nanohybrid Materials for Diverse Applications

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

10:00 . Fusogenic liposomes for the intracellular delivery of phosphocreatine. **O. Nag**, E. Oh, J. Delehanty

10:20 . Chaotic 3D printing of electrically conductive and magnetic cellulose nanocrystal-based hydrogels for the fabrication of electromagnetic shields. **S. Samsami**, M.M. Alvarez, G.T. de Santiago, M.K. Tam, M. Kamkar

10:40 . ZnO: SDS Nanohybrids application for hydrogen storage in HRNG using gas hydrate technology. **B. Mahant**, O.S. Kushwaha, R. Kumar

11:00 . Withdrawn

11:20 . Withdrawn

Colloidal Semiconductor Nanocrystals (Including Perovskite Nanocrystals)

Semiconductor Nanocrystals for Efficient Device Applications

Cosponsored by COLL

MONDAY AFTERNOON

Sheraton Denver Downtown Hotel
Director's Row H

Colloidal Semiconductor Nanocrystals (Including Perovskite Nanocrystals)

Carrier Behavior in Semiconductor Nanocrystals & Interfaces

G. Jia, J. Macdonald, X. Yang, *Organizers*

S. Jeong, *Organizer, Presiding*

2:00 . Controlling opto-electronic properties of QD arrays through beneficial ligand/QD interactions. **M.C. Beard**, M. Martinez

2:25 . Enhancing photoinduced spin-activities in low-dimensional chiral hybrid perovskites. **L. Quan**

2:50 . Ligand desorption and fragmentation in oleate-capped CdSe nanocrystals under high-intensity photoexcitation. **S. Harvey**, R.D. Schaller

3:05 . Direct characterization of binding between quantum dots and electron acceptors. **O.F. Bird**, S. Click, F. Flinkingshelt, B. Layne, K. Miller, J.Y. Yang, S. Ardo, G. Dukovic

Sheraton Denver Downtown Hotel

Director's Row E

Nanohybrid Materials for Diverse Applications

N. Feliu Torres, A. Mews, W. J. Parak, *Organizers*

M. Said, *Presiding*

2:00 . Synergistic strategies for cancer theranostics via ultrasound responsive biodegradable nanoparticles. **M. Henderson**, L. Xiang, S. Sabuncu, S. Drennan, X. Yi, J.L. Mira, M. Gomes, R. Duhon, J. Fischer, A. Yildirim

2:20 . Expanding the toolbox of SERS with flow synthesis of nanomaterials, self-assembly, machine learning and short wavelength IR. **J. Masson**

2:40 . Polymer-grafted nanoparticles as next generation carriers for anti-drug vaccines. **M. Whipple**, R. Ferrier

3:00 . Fabrication of bioconjugated chain-like gold nanoparticle clusters for in-vivo multimodal imaging. **W.D. Qian**, V. Nguyen, X. Wang, Y.M. Paulus

3:20 . Electrochemical control of strong-coupling in CdSe exciton-polaritons. **J. Kelm**, N. Sinai, C. Dones Lassalle, S. Patel, F. Freire-Fernández, S. Park, M. Tan, T.W. Odom, J.L. Dempsey

Sheraton Denver Downtown Hotel
Governor's Square 16

Basic Research in Colloids, Surfactants & Interfaces

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

2:00 . Withdrawn

2:20 . Withdrawn

2:40 . Molecular versus coarse grain structure: Elements of an effective synthetic antifreeze agent. N. Mitchell, Z. Hollins, A. Huebner, E. Walsh, R. Ben, **J. Tsavalas**

3:00 . Space filling interfacial crystals of amino acids and peptoid monomers. H.W. Swanson, K. Barriaes, T. Li, A.R. Kennedy, R.V. Ulijn, T. Tuttle, **A. Lau**

3:20 . Withdrawn

3:40 . Vitamin E's effects on phospholipids membranes via sum-frequency vibrational spectroscopy. **J.M. Taylor**, J.C. Conboy

4:00 . Flexible light-fueled droplet motions *via* thermocapillary convection induced by microwave on liquid repellent surfaces. **H. Hwang**, Y. Zhao, K. Li, C. Lv, S. Wooh

Sheraton Denver Downtown Hotel
Governor's Square 17

Biomaterials & Biointerfaces

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

2:00 . Wound pH-modulating bandage for chronic wounds. **S. Matoori**

2:20 . Synthesis of biocompatible microporous water and application to organ perfusion. **J.J. Calvin**, D.P. Erdosy, M. Taggart, C. Conquest, K. Uygun, J.A. Mason

2:40 . Use of membrane-disruptive properties of amphiphilic copolymers and polymer bioconjugates. **B. Klumperman**, G.C. Kuyler, M. Rautenbach

3:00 . Interfacial assembly of bacterial microcompartment shell proteins in aqueous multiphase systems. **D.T. Abeyasinghe** , E.J. Young, A. Rowland, C. Kerfeld, C.D. Keating

3:20 . 3D printable, injectable amyloid-based composite hydrogel of bovine serum albumin-Aloe vera for rapid diabetic wound healing. **K. Naik**

3:40 . Adsorption and electron transfer behaviors of decaheme cytochrome protein MtrF on ion oxide nanoparticle surfaces. **J. Fang**, S. Zhang, P. Sarker, X. Qin, R. Gambarini, A. Nakano, T. Wei

4:00 . Understanding the impacts of nanoparticle morphology on the porosity within Aluminum adjuvant aggregates. **K. Rinee**, A.Y. Xu

Sheraton Denver Downtown Hotel
Governor's Square 14

Recent Development of Polymer Interface & Polymer Thin Film Preparation, Characterization & Modeling

Interfacial Behavior of Polymer at Interfaces

Z. Chen, T. Kuo, T. Wei, *Organizers, Presiding*

2:00 . Adhesive non-fibrotic hydrogel interfaces on diverse organs. **X. Zhao**

2:30 . Templated chemical vapor deposition polymerization. **J. Lahann**

3:00 . Enzymatic synthesis and characterizations of polyesters using functionalized ionic liquids. **H. Zhao**

3:30 . Recent progress in surface FTIR spectroscopy for molecular level characterization of polymer adhesives and coatings. **M. Brogly**

4:00 . Impact of resin molecular weight on drying kinetics and sag of coatings. M. Issa, S.V. Barancyk, R. Rock, J.F. Gilchrist, **C. Wirth**

4:30 . Polymer Informatics: Algorithmic advances & dielectrics materials design. **S.S. Shukla**, M. Mukherjee, R. Gurnani, R. Ramprasad

5:00 . Molecular behaviors of polyurethane adhesives at buried interfaces: Plasma treatment, annealing, and adhesion. **Y. Wu**, T. Wang, J. Gao, L. Zhang, J. Fay, S. Hirth, J. Hankett, Z. Chen

5:20 . Influence of graphene oxidation states on grafted polyelectrolyte brushes. **X. Cheng**, J. Ge, L. Rong, E. Caldon, J.R. Capadona, R.C. Advincula

Sheraton Denver Downtown Hotel
Governor's Square 15

Advances in Machine Learning & Physics-Based Modeling for Colloidal Materials

R. Marson, J. D. Moore, V. Prasad, T. Wang, *Organizers*
D. Miller, L. Qi, D. Yu, *Organizers, Presiding*

2:00 . Machine learning models for surfactant property prediction. **E. Ren**, C. Shen, Y. Ma, C. Liu

2:30 . Meta-analysis of the onset of critical micelle concentrations in liquid liquid extraction and its impact upon soluton stoichiometry and solute distribution coefficients. **L. da Silva Garcia Leite**, A.E. Clark

3:00 . Predictive models for surfactant formulations. **D. Bray**

3:30 . Understanding design rules of colloidal self-assembly using autonomous phase mapping. **K. Vaddi**, H.T. Chiang, L.D. Pozzo

4:00 . “Simple”: A data-driven framework for measuring and modeling colloidal materials in complex flows. C. Young, P. Corona, A. Datta, M.D. Graham, **M.E. Helgeson**

4:30 . Physicochemical models as regularizers in formulation AI. **N. Washburn**

5:00 . Investigating and simulating the large-amplitude oscillatory shear responses of concentrated nanoemulsions using physics-informed neural networks. **B. Valipourgoodarzi**, Z. Abbasian Chaleshtari, R. Foudazi

5:30 . Annealing monte carlo simulation predicts actuation of sequence-encoded magnetic microrobots. **C. Kemper**, K.M. Kreienbrink, D.K. Schwartz, W. Shields

Sheraton Denver Downtown Hotel
Director's Row I

Nanomaterials

NSRC Special Session: Toward Autonomous Synthesis & Discovery

J. A. Hollingsworth, S. Hunyadi Murph, R. Nagarajan, S. Nuguri, C. M. Sims, D. Watkins,
Organizers
E. Shevchenko, *Presiding*

2:00 . Systematic size and composition control in the synthesis of nanoparticles. **D. Huber**

2:30 . AI-guided fluidics for autonomous precision synthesis of colloidal nanocrystals. **Y. Zhang**

3:00 . Robot- and machine-learning-accelerated discovery of colloidal nanocrystals. **E. Chan**

3:30 . From nanoscale conjugated polymers to autonomous discovery. **J. Xu**

4:00 . Predicting peptide materials via machine learning. **H.C. Fry**, R. Batra, Y.N. Talluri, H. Chan, S.K. Taylor, N. Laud

4:30 . Using spray deposition to understand and engineer block copolymer assembly pathways.
G. Doerk

5:00 . Towards new R&D eco system: Combining autonomous synthesis and functionality testing. **I. Ivanov**, R. Vasudevan, B. Sumpter, R.C. Advincula

5:30 . Advances in MOF nanocrystal formation: Controlling growth and structure. **E.A. Dolgoplova**

Zoom
Virtual Session

Global Virtual Symposium on Chemical Nanomotors: Frontiers & Opportunities

Biomedical Applications of Nanomotors

K. R. Chaturvedi, N. Jha, P. Johri, S. Maiti, W. Wang, *Organizers, Presiding*

9:30 . Injectable nanorobots for the treatment of diseases. **J. Guan**

10:00 . Intelligent micro/nanomotors as mobile field interactive biomedical platform. **F. Peng**

10:20 . Self-propelled magnetic nanomotors. **A. Ghosh**

10:40 . Self-propelled micro- and nanomotors for products-based active therapy. **Y. Tu**

10:55 . Intelligent reconfigurable microrobots for biomedical applications. **D. Jin**

11:10 . Photosynthetic nanobots for repairing anabolism of myocardial injury. **Y. Li**, Y. Wu, Q. He

11:20 . Directional navigation of carbon-based microbottles: harnessing cavitation bubbles for plasmid transfection. **Z. Binglin**, J. Lai, J. Chen, C. Wu, Y. Huang, C. Huang, Q. Guo, J. Tang

Advances in Fluorine Containing Polymers & Composites

Sponsored by POLY, Cosponsored by COLL, FLUO and PMSE

MONDAY EVENING

Colorado Convention Center
Hall A-C

COLL Sci-Mix

R. Gupta, D. Miller, *Organizers, Presiding*

8:00 . Withdrawn

8:00 349. Enhanced contact flexibility from nanoparticles in capillary suspensions. L. Liu, J. Allard, **E. Koos**

8:00 . Withdrawn

8:00 350. Space filling interfacial crystals of amino acids and peptoid monomers. H.W. Swanson, K. Barriales, T. Li, A.R. Kennedy, R.V. Ulijn, T. Tuttle, **A. Lau**

8:00 351. Non-invasive wearable enzymatic sweat glucose utilizing aluminum-doped zinc oxide film on flexible polyimide film. **W. Wu**, T. Wei, F. Ko

8:00 352. Sensitivity of microemulsion structure upon surfactant hydrogen bond strength. **S. Banerjee**, A.E. Clark

8:00 353. Morphology modification in PS/PMMA polymer blend thin films induced by CdS QDs. **H. Kumar**, R. Mukherjee, P. Banerji

8:00 354. Engineering liquid-liquid phase separation to control microstructure and micromechanics in biomaterials. **L. Li**

8:00 355. Biofilm-inspired underwater adhesives. **X. Huang**, S. Saluja, J. Yan

8:00 . Withdrawn

8:00 356. Comparative pore structure and dynamics for bacterial microcompartment shell protein assemblies in sheets or shells. **S. Raza**, D. Sarkar, L.J. Chan, J. Mae, M. Sutter, C. Kerfeld, C.J. Petzold, C.Y. Ralston, S. Gupta, J.V. Vermaas

8:00 358. Exploring hypoxia modulation via DNA-driven spheroid architectures. **S. Saemundsson**, S. Curry, B. Bower, E. DeBoo, A.P. Goodwin, J. Cha

8:00 359. Cellulose-based zwitterionic bottlebrush polymers for DNA delivery into plant roots. **Z. Cartwright**, J. Lee, K. Cureno Hernandez, S. Kim, M. Herrera-Alonso

8:00 360. AI-guided fluidics for autonomous precision synthesis of colloidal nanocrystals. **Y. Zhang**

8:00 361. Harnessing inorganic nanostructures to amplify natural light-driven mechanisms. **E.A. Rozhkova**

8:00 362. Understanding how nanoparticle - substrate interactions impact the localized surface plasmon resonance properties of gold and palladium nanoparticles deposited on steel and aluminum. **R.L. Calabro**, F. Burpo, S.F. Bartolucci, J.A. Maurer

8:00 363. Liposomal hydrogel for wound hydrogen peroxide sensing. **S. Matoori**

8:00 364. Nanoimaging of water bending and carboxylate stretching modes in colloidal nanocrystal films. **W. Takele**, T. Habteyes

8:00 365. New dimensions in colloidal nanomaterials characterization: Rapid measurements of individual nanoparticle masses directly from solution using charge detection mass spectrometry. **C.C. Harper**, T. Schloemer, Z.M. Miller, D. Congreve, E.R. Williams

8:00 366. X-ray photoelectron spectroscopy studies of interfacial interactions of ionic liquids confined in silica mesopores. **B. Knutson**, A. Drake, S. Rankin

8:00 367. Synthesis of silicon nanoparticles passivated by organic ligands via Reactive High Energy Ball Milling (RHEBM): A potential method for crude oil fractionation. **E.A. Flores**, J.P. Vanegas

8:00 368. Interaction of blood and bacteria with slippery hydrophilic surfaces. **Y. Kim**

8:00 369. Computational study on double nitrogen doping along armchair and zigzag directions on graphene. **T. Dinadayalane**, N. Alzaaqi, R. Shanmugam

8:00 370. Withdrawn

- 8:00 371.** Possible structures of molecular corks for advancements in hydrogen storage. **L. Crane**, S. Simpson
- 8:00 372.** Hydroxyapatite nanowire-based piezoelectric film for ultrasonic electroporation-induced drug delivery. **N.R. Jana**
- 8:00 373.** Polymer-grafted nanoparticles as next generation carriers for anti-drug vaccines. **M. Whipple**, R. Ferrier
- 8:00 374.** Electrochemical control of strong-coupling in CdSe exciton-polaritons. **J. Kelm**, N. Sinai, C. Dones Lassalle, S. Patel, F. Freire-Fernández, S. Park, M. Tan, T.W. Odom, J.L. Dempsey
- 8:00 375.** Nanoparticles enabled isolation and enrichment of endogenous AMPK protein complexes for top-down mass- spectrometry analysis. **M. Wang**, H. Chan, B. Krichel, E.A. Reasoner, Y. Ge, S. Jin
- 8:00 376.** Fluorous phase oxygen optical nanosensor for overcoming metabolite interference in microbial systems. **J. Branning**, T. Sodia, A. Mendonsa, K.J. Cash
- 8:00 377.** Advancing spinal cord injury repair: A particle-embedded hydrogel for sustained antifibrotic release. **X. Li**, F. Rossi, M.S. Shoichet
- 8:00 378.** Infrared spectro-microscopy of solid-liquid interfaces. **X. Zhao**, M. Salmeron
- 8:00 379.** Controlling the durability and optical properties of triplet-triplet annihilation upconversion nanocapsules. **T. Schloemer**, C. Harper, S. Sanders, P. Narayanan, Q. Zhou, M. Hu, E.R. Williams, D. Congreve
- 8:00 380.** *In situ* optical microscopy of electroless metal deposition reactions on polymer interfaces towards discrete functional particle synthesis. **G.P. Alvarado Munoz**, T. Papenmeier, S.K. Conlin, R. Coridan
- 8:00 .** Withdrawn
- 8:00 381.** Dissipative particle dynamics modeling of phospholipid monolayers at air-water interfaces: Temperature-dependent two-dimensional phase behavior and elastic properties. **K.P. Santo**, M. Iepure, J. Arredondo, Y. Min, A.V. Neimark
- 8:00 383.** Environmentally responsive liquid crystal emulsions stabilized by amphiphilic gold nanoparticles. **O.H. Piñeres-Quiñones**, M.K. Oñate-Socarras, F. Wang, D.M. Lynn, C. Acevedo-Velez
- 8:00 384.** Improving magnetorheological fluid performance through fundamental analysis. **E. Johnson**, S. Thiagarajan, A. Koh

8:00 . Withdrawn

8:00 385. Elucidating anomalous structural and dynamic evolution of confined hydrocarbon and water mixtures on freezing and melting behavior in nanoconfined environments. **Y. Jia**, R. Hazra, G. Gadikota

8:00 386. Sugar watts: A sweet solution to a sour problem. **R. Stanley**, N. Pringle, W. Paxton

8:00 387. Enhanced lithium-ion diffusion by lignin nanoparticles-dispersed electrolytes to suppress the lithium dendrite. **N. Arabzadeh Nosratabad**, S. Xu, Q. Li, Y. Xing, C. Wan, J. Lee

8:00 388. Optical response mechanisms of DNA-carbon nanotube optical sensors to small molecule analytes investigated with molecular dynamics simulations and machine learning. **S. Chakraborty**, L. Vukovic, A. Krasley, A.G. Beyene

8:00 389. Investigating and simulating the large-amplitude oscillatory shear responses of concentrated nanoemulsions using physics-informed neural networks. **B. Valipourgoodarzi**, Z. Abbasian Chaleshtari, R. Foudazi

8:00 390. Annealing monte carlo simulation predicts actuation of sequence-encoded magnetic microrobots. **C. Kemper**, K.M. Kreienbrink, D.K. Schwartz, W. Shields

8:00 391. Coarse grained computational chemistry of cyclodextrin based emulsions. **S. Vyas**, Y.L. Wang, J.A. Bikker

8:00 407. Atomistic study on the hydration and fouling resistance behaviors of hybrid amphiphilic and zwitterionic polymer surfaces. **X. Qin**, A. Chen, J. Fang, P. Sarker, M. Uline, T. Wei

8:00 408. Interfacial tension of grafted block copolymers at immiscible homopolymer interfaces. **A. Nehete**, F.S. Bates, K.D. Dorfman

8:00 409. Homopolymer PPSU for nanotherapy. **B. Qiao**

8:00 410. Development of functionalizable film by using substrate-independent surface coating method. **S. Park**, D. Hong

8:00 411. Surface charge of aqueous iron solutions revealed through surface potential measurements. **G. Gattermeir**, B. Biswas, N. Adhikari, H.C. Allen

8:00 412. Modeling electric double layer structure and surface reactions. **J. Wu**

8:00 413. Electrokinetic transport dynamics of nanoparticles in 3D confined ordered porous media. **A. Shi**, D.K. Schwartz

8:00 414. Force fields with potential: Simulating reactions at working electrodes with constant potential machine learned force fields. **A. Dodin**, D. Limmer, P.L. Geissler

8:00 415. Structure, elemental distribution, and electronic spectra of compositionally complex nanocrystals revealed by scanning transmission electron microscopy. **B.F. Hammel**, L.M. Hall, L.M. Pellows, O.M. Pearce, P. Tongying, S. Yazdi, G. Dukovic

8:00 416. Withdrawn

8:00 417. Modulating the kinetics of photoinduced charge separation and charge recombination of CsPbBr₃ perovskite nanocrystals through ligand-shell Engineering. A.S. Malinoski, **C. Wang**

8:00 418. Colloidal thin film phases, phase transitions, structure, and dynamics. **A.G. Yodh**

8:00 419. Intuitive atomic-ions-in-diatomic-molecules model for the electronic structure of MX molecules. **R.W. Field**, S.L. Coy

TUESDAY MORNING

Zoom
Virtual Session

Global Virtual Symposium on Chemical Nanomotors: Frontiers & Opportunities

Biomedical Applications of Nanomotors

K. R. Chaturvedi, N. Jha, P. Johri, S. Maiti, W. Wang, *Organizers, Presiding*

5:30 . Nano and microrobots for biofilm biomedical applications and environmental remediation. **M. Pumera**

6:00 . Molecular engineering of synthetic motile systems via self-assembly for biomedical applications and beyond. **D.A. Wilson**

6:20 . Construction and biomedical applications of micro/nano-motors. **X. Ma**

6:40 . *In situ* soil remediation based on bioinspired self-propelled micromotors with improved transport efficiency in the subsurface environment. **H. Wang**

6:55 . Drug delivery system based on neutrophil micro-nanorobots. **L. Tang**

7:10 . Rolling helical microbots for cellular patterning. **F. Kirmizitas**, S. Mallick, Y. Yang, S. Das

7:20 . Facile synthesis of PVDF-Fe₃O₄ microswimmer for effective degradation of PFOA under cooperative piezo-fenton mechanism. **N. Mustapa**

Sheraton Denver Downtown Hotel
Director's Row H

Colloidal Semiconductor Nanocrystals (Including Perovskite Nanocrystals)

Carrier Behavior in Semiconductor Nanocrystals & Interfaces

S. Jeong, G. Jia, X. Yang, *Organizers*
J. Macdonald, *Organizer, Presiding*

8:00 . Control of symmetry breaking in metal halide perovskite nanocrystals. **M. Liu**

8:25 . Photogenerated spin states in quantum dot-molecule conjugates. **J.H. Olshansky**

8:50 . Withdrawn

9:05 . Upconverted Hot electrons in Mn-doped quantum dots can drive efficient solvated-electron mediated chemical transformation. **C. Orrison**, C. Wang, D. Son

9:20 . CsPbBr₃ Perovskite nanoplatelets surface functionalization with chiral anionic ligands and silica shells. T. Tran, H. Nyiera, **J. Zhao**

Sheraton Denver Downtown Hotel
Governor's Square 17

Biomaterials & Biointerfaces

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

8:00 . Poly(2-vinyl-4,4-dimethylazlactone) as a reactive scaffold for the development of tunable drug delivery platforms. A.E. Smith, **A. Fortenberry**, E. Rasmussen, A. Mohammad, T. Werfel

8:20 . Particle-based hierarchical structures in omniphobic smart coatings for prevention of infectious diseases in high-touch areas. **N. Abu Jarad**, K. Rachwalski, F. Bayat, A. Shakeri, R. MacLachlan, M. Villegas, E.D. Brown, L. Soleymani, T. Didar

8:40 . Bioengineered colorimetric pH-sensing bandage for point-of-care wound diagnostics. **S. Matoori**

9:00 . Maintaining the hydrophilicity of biodegradable films treated with nitrogen-plasma: influence of aging condition on hydrophobic recovery. **M. Abdelmessih**, M.J. Hawker

9:20 . Withdrawn

9:40 . Hydrogen sulfide-releasing polymeric micelles with anti-cancer activity. **A.J. Van der Vlies**, U. Hasegawa

10:00 . Thioether-containing polymeric micelles with fine-tuned oxidation sensitivities and dissociation rates for anti-cancer drug delivery. R. Chang, A.J. Van der Vlies, **U. Hasegawa**

Sheraton Denver Downtown Hotel
Governor's Square 15

Surface Chemistry

Spectroscopic Studies of Surface Processes

H. Cornell, C. R. Kasprzak, A. V. Teplyakov, L. Tribe, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 . Oxidation and recovery of W-carbide surfaces studied with ambient pressure XPS. E. Monazami, J. Schnadt, S. Urpelainen, **P. Reinke**

8:25 . Surface reactivity of iridium atoms and 2-Hydroxyethylhydrazinium nitrate. **K. Foreman**, B. Bilik, K.H. Bowen

8:45 . Surface modifications of battery powders and separators for production of enhanced Li-ion batteries via high throughput atomic layer deposition (ALD). **M. Groner**, A. Dameron, B. Hughes, G. Patch, D. Lewis, M. Martinez, E. Reid, M. Rogers, J. Sharma, y. feng, W. Steenman, J. Li

9:05 . Withdrawn

9:25 . *In situ* FTIR/MS study of new C-C bond formation over mixed oxide nanomaterial. **D.K. Paul**

9:45 . Thin film characterization of copper selenophosphate nanoparticles for photovoltaic applications. **E. Snyder**, N. Neisius, L. MacHale, A. Prieto

10:05 Concluding Remarks.

Sheraton Denver Downtown Hotel
Governor's Square 14

Colloid & Surface Chemistry in Energy & Sustainability

Interfacial Structure & Dynamics

M. Karayilan, C. Wirth, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 . Controlled wetting behavior and anti-corrosion in coatings and 3D-printed functional parts. **R.C. Advincula**

8:45 . Methyl-branched fatty acids as friction modifiers. R. Cui, **M. Ruths**

9:05 . Novel amphiphilic polyacrylates to break water-in-crude oil emulsions. **T. Kuo**, K. Grzesiak, J.D. Moore, A. Nowbahar, A. Schmitt, D. Yu, T.H. Kalantar, D. Brennan, M. Ladika, D. Miller

9:25 . Elucidating anomalous structural and dynamic evolution of confined hydrocarbon and water mixtures on freezing and melting behavior in nanoconfined environments. **Y. Jia**, R. Hazra, G. Gadikota

9:45 Intermission.

9:55 . Manipulating interfaces to unlock the potential of sub-micron thick ionomeric systems in sustainable energy technologies. **S.K. Dishari**

10:35 . Withdrawn

10:55 . Revealing role of aqueous complexation in the solvent extraction. **W. Bu**, P. Sun, M.L. Schlossman

Sheraton Denver Downtown Hotel
Director's Row E

Frontiers & Challenges in Nanoparticle-Mediated Chemical Transformations

Carbon Utilization

W. Huang, Y. Sun, J. Zhao, *Organizers, Presiding*

8:00 . Enhancing nanoparticle catalysis for selective CO₂ reduction. **S. Sun**

8:30 . Teamwork and dynamics in intermetallic methanol steam reforming catalysts. **M. Armbruster**

9:00 . Catalytic hydrogenation of CO₂ to methanol through tuning the support and the metal centers in supported metal catalysts. **Z. Wu**

9:30 . Polymers on metal nanoparticles: Ligand-guided synthesis of bimetallic nanoparticles for CO₂ reduction. **J. He**

10:00 Break.

10:15 . Photocatalytic CH₄ activation for selective oxidation and beyond. **D. Wang**

10:45 . Dynamic Evolution of Well-Defined Cu Nanocatalysts for CO₂ Reduction. **Y. Yang**

11:15 . How to understand the interface in quantum dot/microbe hybrids for catalytic CO₂/N₂ reduction. **C. Liu**

Sheraton Denver Downtown Hotel
Governor's Square 16

Recent Development of Polymer Interface & Polymer Thin Film Preparation, Characterization & Modeling

Interfacial Biological Molecule Behavior

Z. Chen, T. Kuo, T. Wei, *Organizers, Presiding*

8:00 . Surface Hydration and Fouling Resistant Behaviors of Zwitterionic Polymers. **T. Wei**

8:30 . Chemically responsive liquid crystal polymers with immobilized enzymes. **D.K. Schwartz**

9:00 . Interfacial polymer-protein assembly for catalysis and biomedical applications. **Q. Wang**, T. Meethong

9:30 . Active polar gel molecular model for elucidating mechanisms for cellular self-assembly in collagen hydrogels. **M. Uline**

10:00 . Nanopores: Confinement proteins. **I. Szleifer**

10:30 . Impact of controlled dynamic topographies on biological interactions. **J. Min**

11:00 . Withdrawn

11:20 . Strong and flexible polyurethane/PEDOT:PSS nanofiber with superhydrophobic surface for electromagnetic interference shielding. **N. Keshmiri**, P. Sambyal, A. Milani, M. Arjmand

Sheraton Denver Downtown Hotel
Director's Row I

Nanomaterials

NSRC Special Session: Nanopatterning & Assembly

J. A. Hollingsworth, S. Hunyadi Murph, R. Nagarajan, S. Nuguri, C. M. Sims, D. Watkins,
Organizers
E. G. Bowes, *Presiding*

8:00 . Advanced materials nanopatterning enabled by vapor-phase infiltration (VPI) / sequential infiltration synthesis (SIS). **C. Nam**

8:30 . Functional materials and non-equilibrium behaviors from nanoparticle surfactants at liquid-liquid interfaces. **B. Helms**

9:00 . Self-assembly of nanoparticles and organic molecules in organic solvents. **E. Shevchenko**

9:30 . Precision synthesis and integration: Strategy for realizing device applications of colloidal quantum dots. **E.G. Bowes**

10:00 . Large-area maskless patterning of soft nanomaterials using polymer pen lithography. **K. Kim**, W. Higgins, J. Lanasa, J. Magoline

10:30 . Exploring DNA-based material voxel crystal assemblies through automated synthesis and characterization. **J.S. Kahn**, B. Minevich, D. Redeker, A. Michelson, O. Gang

11:00 . Symmetry-specific Bond Order Parameters (SymbOPs): A novel tool for characterizing self-assembled nanostructures. **A. Tkachenko**

11:30 . Withdrawn

TUESDAY AFTERNOON

Sheraton Denver Downtown Hotel
Governor's Square 16

Langmuir Lectureship & Colloid & Surface Technology Award Lectures

D. Miller, C. Wirth, *Organizers, Presiding*

2:00 Opening Remarks & Introduction.

2:05 . Aqueous phase coexistence in and around lipid membranes. **C.D. Keating**

3:00 Introduction.

3:05 . Molecular diffusion at wet interfaces. **D.K. Schwartz**

Sheraton Denver Downtown Hotel
Governor's Square 14

Colloid & Surface Chemistry in Energy & Sustainability

Sustainability & Novel Materials

M. Karayilan, C. Wirth, *Organizers, Presiding*

2:00 Introductory Remarks.

2:05 . Non-aqueous Pickering emulsions for encapsulation of water-sensitive liquids. N. Starvaggi, E. Cruz Barrios, **E. Pentzer**

2:45 . Exploring the versatility of cellulose based nanomaterials: advantages in composites, packaging, and adhesives. **C. Szczepanski**

3:25 . Withdrawn

3:45 . Quantification of protein corona formation on luminescent polymer dot nanoparticles by digital fluorescence imaging. Z. Rosenzweig, **K. Mendis**

4:05 Intermission.

4:15 . Waterborne acrylated epoxidized soybean oil (AESO)-coated paper for sustainable packaging. **A. Khan**, M. Rabnawaz

4:35 . Solar-powered plasmonic heaters: A greener alternate energy source. **R. Kashyap**, P. Pillai

4:55 . Effect of layer thickness on the thermoelectric properties of fully sprayed poly(3-hexylthiophene-2,5-diyl) thin films doped with chloroauric acid. **B. Sochor**, S. Schraad, L. Huber, A. Hexemer, T. Laarmann, S.K. Vayalil, P. Mueller-Buschbaum, S.V. Roth

Sheraton Denver Downtown Hotel
Director's Row E

Frontiers & Challenges in Nanoparticle-Mediated Chemical Transformations

Spectroscopy & Characterization

W. Huang, Y. Sun, J. Zhao, *Organizers, Presiding*

2:00 . Engineering chiral plasmonic nanoparticles with circularly polarized light. T. Qiao, P. Bordoloi, J. Dionne, **M.L. Tang**

2:30 . Identifying the hot carrier effects and mechanisms in plasmonic photocatalysis. **T. Lian**

3:00 . Colloidal Cd-chalcogenide-metal based heterostructure quantum dots: synthesis, self-assembly and photocatalysis. **O. Chen**

3:30 Break .

4:00 . Surface-enhanced Raman scattering for real time observation of chemical transformations. **X. Ling**

4:30 . Role of surface chemistry in the synthesis of supported bimetallic/intermetallic catalysts.
P. Zhai, **K. Ding**

5:00 . Comparison of thermal stability of supported metal@gold nanobipyramid photocatalysts.
G. Chen

Sheraton Denver Downtown Hotel
Governor's Square 15

Surface Chemistry

Bio & Polymer Surfaces

H. Cornell, A. V. Teplyakov, L. Tribe, *Organizers*
C. R. Kasprzak, *Organizer, Presiding*

2:00 Introductory Remarks.

2:05 . Interaction of blood and bacteria with slippery hydrophilic surfaces. **Y. Kim**

2:25 . Buffer induced ionically crosslinked polyelectrolyte treatment for self-extinguishing polyester. **D.L. Smith**, N.A. Vest, M. Convento, M. Montemayor, J.C. Grunlan

2:45 . Advances in controlled release of antimicrobial peptides for wound healing. **M. Bagherabadi**, O. Avrutina, A. Andrieu-Brunsen

3:05 . Versatile prepolymer platform for controlled tailoring of quantum dot surface properties.
J. Lee, G. Soares, C. Doty, J. Park, J. Hovey, H. Han

3:25 Intermission.

3:35 . *In situ* observation of the mechanical behavior of microresin patterns during the melting and freezing of ice films. **Y. Hanawa**, J. Zhang, X. Minghan, M. Mohit, Y. Sasaki, K. Sawada, J. Yoshida, A.P. Sasmito, A. Sakuma

3:55 . Withdrawn

4:15 . Exploring the stability of polyhistidine-tagged surface modifications. **Z. Albeshir**

4:35 . Comparative study of anti-biofilm properties on several polymer coated films by 3D printing using FDM. **H. Kanematsu**, D.M. Barry, T. Saiki, A. Hirayama, A. Otsu, K. Ogata, A. Ogawa, T. Kogo, N. Hirai, T. Nakano

4:55 Closing Remarks.

Sheraton Denver Downtown Hotel
Director's Row H

Surfaces & Interfaces in Chemical & Biological Systems: Symposium in honor of Hai-Lung Dai

Colloids & Nanomaterials

E. Borguet, T. Lian, *Organizers*
G. V. Hartland, *Organizer, Presiding*

2:00 . Exploration into enhanced attenuation of aerosolized fibers. **D.L. Kuhn, J.B. Harland**

2:30 . Colloidal thin film phases, phase transitions, structure, and dynamics. **A.G. Yodh**

3:00 . Spin dependent ultrafast charge carrier dynamics of metal halide perovskite quantum dots and nanoclusters. **J.Z. Zhang**

3:30 . Real-time spectroscopic probing of surface-dependent biocompatibility and toxicity of nanoparticles. **X. Xu**, M. Johnson, P. Songkiatiskak

4:00 Intermission.

4:10 . Super-localization imaging of plasmonic nanostructures. **K.A. Willets**

4:40 . Quantification and exchange of ligands on the surface of noble-metal nanocrystals. **Y. Xia**

5:10 . Photocatalytic CO₂ methanation on ultrafine metal nanoparticles. **Y. Sun**

Sheraton Denver Downtown Hotel
Governor's Square 17

Advanced In-Situ Imaging Methods for Colloidal Chemistry: Probing Interaction & Dynamics at the Nanoscale

Advanced Imaging for Reactions & Colloidal Forces

Q. Chen, D. Li, Y. Xie, *Organizers, Presiding*

2:00 . Understanding and controlling crystal growth and assembly via in situ techniques. **D. Li**

2:30 . Elucidating the role of reduction kinetics in the phase-controlled growth on preformed nanocrystal seeds: A case study of Ru. **K. Fichthorn**

3:00 . Packing and dynamics of Gibbs monolayers of nanoparticles and nanorods. **T.P. Russell**, D.A. Hoagland, A. Ribbe, S. Srivastava, Z. Fink, P. Kim

3:30 . Understanding particle aggregation-based crystallization pathways by using advanced transmission electron microscopy and X-ray scattering techniques. **X. Zhang**

4:00 Intermission.

4:20 . Understanding symmetry-breaking at the single nanoparticle level. **M.R. Jones**

4:50 . Nanoscale elemental mixing and chemical ordering in multimetallic nanoparticles. **K. He**

5:20 . Expanding infrared information at nanoscale: Peak force infrared microscopy-based multi-color imaging. **Q. Xie**, X. Xu

5:40 . Infrared spectro-microscopy of solid-liquid interfaces. **X. Zhao**, M. Salmeron

Sheraton Denver Downtown Hotel
Plaza Ballroom D

Interfacial Phenomena & Dynamics in Electrochemical Systems

J. Frechette, M. A. Gebbie, A. Gupta, *Organizers, Presiding*

2:00 . Liquid structure at heterogeneous solid-liquid interfaces. **Y. Zhang**

2:40 . Electric double layer at graphene and graphene-like interfaces and how to experimentally assess it. **M. Jaugstetter**, L.J. Falling, S. Nemsak, M. Salmeron

3:00 . Quantifying the total potential and Stern layer water molecules over biased hematite anodes with nonlinear optics. **F. Geiger**

3:20 . Insights into the nanostructure and formation of membranes for electrochemical systems and water treatment. **G. Su**

4:00 Break.

4:20 . Withdrawn

5:00 . Charging dynamics of asymmetric electrolytes in porous media can be represented by magnetically coupled transmission lines. **F. Henrique**, A. Gupta

5:20 . Ionic liquids at electrified interfaces: Influences in reactions, energy storage and electrodeposition. **E.J. Biddinger**

Sheraton Denver Downtown Hotel
Director's Row I

Nanomaterials

NSRC Special Session: Application-driven Synthesis from Energy & Biology to Quantum

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

2:00 . Surface engineering of complex metal oxide thin films for efficient solar water splitting. **M. Liu**

2:30 . Advancing catalysis understanding through shape-controlled synthesis of noble metal nanocrystals. **F. Lu**

3:00 . Nanoscale framework materials for electrostatic energy storage. **Y. Liu**, Z. Xie, H. Li

3:30 . Developing an encapsulation platform using aqueous two-phase systems and double hydrophilic block copolymers. **M. Kim**, H. Lee

4:00 . Renewable colloidal particles: Synthesis, deuteration and molecular assembly. **Y. Yuan**, H.M. O'Neill, Y. Wang, P. Bonnesen, I. Ivanov, J. Keum, T. Rush, W. Leite

4:30 . Harnessing inorganic nanostructures to amplify natural light-driven mechanisms. **E.A. Rozhkova**

5:00 . Artificial graphene nanoribbons with tailored topological states. **n. guisinger**, P. Darancet

5:30 . Assessing colloidal synthesis routes toward different phases in binary M-Te and ternary M-Ge-Te systems (M=Cr, Fe). D. Parobek, T. Moosavy, J. Watt, **S. Ivanov**

WEDNESDAY MORNING

Zoom
Virtual Session

Global Virtual Symposium on Chemical Nanomotors: Frontiers & Opportunities

Living Nanomotors

K. R. Chaturvedi, N. Jha, P. Johri, S. Maiti, W. Wang, *Organizers, Presiding*

5:30 . Nanomotors and diffusion. **P. Fischer**

6:00 . Topological and geometrical control of bacterial turbulence. **D. Nishiguchi**

6:20 . Tuning taxis of Zn(II) Metallomicellar catalysis in the gradient of biologically relevant anions. **P. Priyanka**, S. Maiti

6:30 . Tuning migration of liposomes in Ca^{+2} gradient via modulating membrane hydrophobicity. **R. Yadav**, S. Maiti

6:40 . Enzyme chemotaxis in heterogeneous crowded media under salt gradient. **S. .**

6:50 . Controlling mobility of DNA coacervate in salt gradient. **S. Juneja**, S. Maiti

7:00 . Discovering molecules that can cross the blood brain barrier with deep learning. **V. Dubey**, U. Choudhury

7:10 . Chemo-Mechanical communication between liposomes based on enzyme-cascades. **Y. Tseng**, J. Song, J. Zhang, A. Sen

7:20 . Enzyme catalysis causes fluid flow, motility, and directional transport on membranes. **A. Sapre**

7:30 . Enzyme chemotaxis and non-reciprocal interactions. **N. Mandal**, A. Sen, R.D. Astumian

Sheraton Denver Downtown Hotel
Governor's Square 14

Active & Responsive Matter

B. Bharti, S. Kamdar, *Organizers, Presiding*

8:00 . Anomalous transport in interface-rich environments due to self-propulsion and dynamic confinement. **D.K. Schwartz**

8:30 . Confinement dependent enhancement of nanoswimmers in dynamic porous media. **I.J. Wyllie**, D.K. Schwartz, A. Shi

8:45 . Unified mobility expressions for externally driven and self-phoretic propulsion of particles. **A. Ganguly**, S. Roychowdhury, A. Gupta

9:00 . Controlling passive and active colloids using chemical gradients. **D. Tree**, M.N. McDonald, C.K. Peterson

9:15 . Design-driven motion of microrobots powered by acoustic streaming flows. **R. Raj**, A. Gupta, C. Shields IV

9:30 . Programming self-assembly of nonspherical microparticles with embedded chains of magnetic nanoparticles. **C. Kemper**, H. Tomazin, M. Rizvi, J.B. Tracy, W. Shields

9:45 . Orbits, spirals, and trapped states: Tuning the dynamics of a phoretic Janus particle near a chemical fuel source or sink. P. Bayati, **S. Mallory**

10:00 . Withdrawn

10:15 . Merging Turing patterns and cellular automata: Simultaneously assembling and evolving structures via diffusiophoresis. **S. Mirfendereski**, B.M. Alessio, A. Gupta

Sheraton Denver Downtown Hotel
Governor's Square 15

Biomaterials & Biointerfaces

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

8:00 . Polymeric graft-then-shrink coatings for low-fouling biosensors and medical devices. **R.G. Wylie**

8:20 . Withdrawn

8:40 . Highly branched poly(*N*-isopropyl acrylamide) functionalized with an inducer molecules - colloidal suspensions to manipulate quorum sensing in microbiological systems to manipulate pathological virulence. **T.A. Swift**, J. Shepherd

9:00 . Piezoelectric biomaterials as a stimulated 3D cell culture platform for enhanced exosome production. J. Johnston, H. Jeon, Y. Choi, G. Kim, H. Chang, N. Myung, **Y. Wang**

9:20 . Withdrawn

9:40 . Visual imaging-guided personalized medicine nanomedicine delivery strategy. **C. Liu**, P. Zhang, L. Meng, D. Wu, B. Chen, S. Hu, N. Yuan, W. Qiao

Sheraton Denver Downtown Hotel
Governor's Square 17

Surface Chemistry

Liquid-based Surfaces & Interfaces

H. Cornell, C. R. Kasprzak, A. V. Teplyakov, L. Tribe, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 . Magnetic biochar from fruit peels: A green and cost-effective solution for wastewater treatment. **A. Mishra**

8:25 . On-demand, contact-less and loss-less droplet manipulation via contact electrification. **S.R. Pillai**

8:45 . Color morphing surfaces with effective chemical shielding. **A. Rather**

9:05 . Effects of size and salt on surface-bulk partition of organic molecules in airborne aerosols. **Y. Wu**, J.N. Mason, Y. Li, X. Hu, H. Dai

9:25 . Magnetic *tagetes spp* biochar (γ -Fe₂O₃-TSB) for efficient removal of cationic dye from wastewater: A sustainable and economical approach. **A. Mishra**

9:45 . Probing liquid-liquid interfaces via fluorescence multivariate-curve-resolution spectroscopy. G. Gundogdu, E. Yilmaz Topuzlu, **H. Okur**

10:05 Closing Remarks.

Sheraton Denver Downtown Hotel
Director's Row H

Colloidal Nanoparticles in Materials Synthesis

M. R. Jones, R. Macfarlane, J. Millstone, *Organizers, Presiding*

8:00 . Design of multifunctional nanomaterials and devices through colloidal nanocrystal synthesis and self-assembly.. **C.B. Murray**, E. Marino, S. Yang, Y. Ning, C. Gonzalez, H. Bharti, D. Yang, J.G. Saven, Y. Zhang, T. Vo, S.C. Glotzer, S.J. Neuhau, C.R. Kagan

8:30 . Nanoparticle Assembly into macroscopic colloidal crystals. **R. Macfarlane**

9:00 Break.

9:15 . Engineering perovskite nanocrystals as quantum light sources. **M. Kovalenko**

9:45 . Harnessing the full power of “small” data to guide the synthesis of colloidal nanocrystals. **R.L. Brutchey**

10:15 Break.

10:30 . Dynamic nanocrystal superlattices with thermally triggerable lubricating ligands. **Y. Ning**, S. Yang, D. Yang, Y. Cai, J. Xu, R. Li, Y. Zhang, C.R. Kagan, J.G. Saven, C.B. Murray

10:50 . Making poor metals rich at the nanoscale. **M.B. Ross**

Sheraton Denver Downtown Hotel
Plaza Ballroom D

Interfacial Phenomena & Dynamics in Electrochemical Systems

J. Frechette, M. A. Gebbie, A. Gupta, *Organizers, Presiding*

8:00 . Promoting CO₂ reduction to multi-carbon products by tuning the activity of water. **A. Hall**

8:40 . Decomposing total current into capacitive and Faradaic contributions: A theoretical model based on Poisson-Nernst-Planck Equations with Frumkin-Butler-Volmer kinetics. **N. Jarvey**, A. Gupta

9:00 . Surface charge of aqueous iron solutions revealed through surface potential measurements. **G. Gattermeir**, B. Biswas, N. Adhikari, H.C. Allen

9:20 Break.

9:40 . Electric double layer, solvation structure, and electrolyte reaction in lithium metal batteries. **J. Lopez**

10:20 . Reduced-order modeling of ion transport in bipolar membranes for electrochemical CO₂ capture and conversion. **P. Romero**, P. Brimley, W. Smith, A. Gupta

10:40 . Electrokinetic transport dynamics of nanoparticles in 3D confined ordered porous media. **A. Shi**, D.K. Schwartz

11:00 . Modeling electric double layer structure and surface reactions. **J. Wu**

Sheraton Denver Downtown Hotel
Director's Row I

Nanomaterials

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

8:00 . Embedded quantum dots in solid matrices: next generation hybrid materials with giant tunability. **C. Fu**, M. Li

8:20 . Colloidal quantum shells for optoelectronic applications. **M. Zamkov**

8:40 . Withdrawn

9:00 . Switchable optical properties of nanomaterials in electrowetting devices. **U.N. Tohgha**, K. Lee, N.P. Godman, M.E. McConney

9:20 . High-throughput all-optical structural characterization of metal nanocrystals with varied symmetry. Z. O'Dell, **M. Knobeloch**, S.E. Skrabalak, K.A. Willets

9:40 . Withdrawn

10:00 . Quantum shell architecture improves multi-exciton dynamics in near IR. **D. Harankahage**, M. Zamkov

10:20 . Power dependence in the excited-state lifetime decay of homogenous Cu_xZn_yIn_zS₂ and heterogenous/gradient-alloyed Cu_x(Zn_y)In_zS₂ quantum dots. **J.C. Morales Orocu**, C.D. Heyes

10:40 . Liposomal hydrogel for wound hydrogen peroxide sensing. **S. Matoori**

11:00 . Resonance energy transfer and Purcell enhancement in a single Cu₂O/Au hybrid optical nanoantenna. **K. Kalkan**, N. Khatri

11:20 . Structural and optical properties of CIS/ZnSeS core/shell synthesized under thermodynamic and kinetic controlled conditions. **H. Kaur**, C.D. Heyes

Sheraton Denver Downtown Hotel
Governor's Square 16

Recent Development of Polymer Interface & Polymer Thin Film Preparation, Characterization & Modeling

Preparation, Modeling & Characterization of New Polymer Materials at Interfaces

Z. Chen, T. Kuo, T. Wei, *Organizers, Presiding*

8:00 . Precision polymer monolayers on soft materials: Nanostructuring polymer thin film interfaces. **S. Claridge**

8:30 . Engineering resilient hydrogels: Double-network design for superior performance. **J. Zheng**

9:00 . Qualitative estimation of the glass transition temperature and its depth dependence in a liquid and a thin film of polystyrene using the schematic mode-coupling theory. **P. Choi**

9:30 . PSCF+ and some examples of its application. **Q. Wang**

10:00 . Designing facial amphiphilicity for effective interactions with cell membranes. **C. Tang**, L. Kurnaz, S. Barman

10:30 . Multiscale modeling of nanoconfinement and interfaces in polymeric materials. **W. Xia**

11:00 . Do we need an alternative to polyvinylidene fluoride-based membranes and where will it come from?. **M. Xiao**

11:20 . Interfacial tension of grafted block copolymers at immiscible homopolymer interfaces. **A. Nehete**, F.S. Bates, K.D. Dorfman

Sheraton Denver Downtown Hotel
Director's Row E

Surfaces & Interfaces in Chemical & Biological Systems: Symposium in honor of Hai-Lung Dai

Liquid & Solid Surfaces

E. Borguet, G. V. Hartland, T. Lian, *Organizers*

P. Decola, *Presiding*

8:00 . Reviewing the chi(3) story. **F. Geiger**

8:30 . Chemical physics at interfaces: Non-equilibrium evaporation of NO from liquid microjets to velocity map imaging photoelectron photoemission from single plasmonic nanostructures. M. Ryazanov, V. Svoboda, J. Pettine, **D.J. Nesbitt**

9:00 . Reversed fractionation of aqueous carbonate and bicarbonate at the air–water interface. **R.J. Saykally**

9:30 . Development of interface-specific two-dimensional electronic sum frequency generation spectroscopy. Z. Huangfu, Y. Qian, **Y. Rao**

10:00 . Two long standing problems on sum-frequency spectroscopy at interfaces. **Y. Shen**

10:30 . Nonlinear response of Ag(111): Coherent nonlinear photoemission spectroscopy is stranger than fiction. **H. Petek**

11:00 . Temperature dependent second harmonic studies of gas adsorption to metallic and semi-conducting substrates. **R.A. Walker**

11:30 . Time domain views of 2D van der Waals quantum matter. **X. Zhu**

WEDNESDAY AFTERNOON

Sheraton Denver Downtown Hotel
Governor's Square 14

Active & Responsive Matter

B. Bharti, S. Kamdar, *Organizers, Presiding*

2:00 . Chemo-mechanical transduction in enzyme-powered motors and pumps. **A. Sen**

2:30 . Beyond the scallop theorem: Exploring combined mechanical and chemical propulsion mechanisms of a bent rod actuator. **A. Ganguly**, R. Raj, C. Becker, W. Shields, A. Gupta

2:45 . Self-shaping active polymer. **M. Kumar**, A. Murali, A.G. Subramaniam, R. Singh, S. Thutupalli

3:00 . Responsive complex emulsions: All-liquid sensors for detection and classification of environmental contaminants. **S. Savagatrup**

3:15 . Withdrawn

3:30 . Local polar and long-range isotropic activity assisted swelling and collapse dynamics of an active ring polymer. **S. Kumar**, S. Thakur

3:45 . Emergence of self-organized patterns in predator-prey droplet systems. **Y. Liu**, K. Ramalingam, P. Moerman, A. Khair, L.D. Zarzar

4:00 . Crafting dynamic 3D surfaces: Synthesis and innovative applications of stimuli-responsive structures. **X. Cheng**, J. Ge, L. Rong, E. Caldon, R.C. Advincula

Sheraton Denver Downtown Hotel
Governor's Square 15

Biomaterials & Biointerfaces

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

2:00 . Understanding the cell signaling dynamics using redox nanoparticle-enabled cell models. S. Wang, K. Zhang, **B. Yan**

2:20 . Surface-enhanced infrared spectroscopy (SEIRS) studies of extracellular vesicles using plasmonic gold nanoparticles. **M. Palmi**, T. Bebesi Farkasne, Z. Varga, J. Mihaly

2:40 . Observing silk nanofibril formation in real time unveils a continuous nucleation-growth pathway. **C. Shi**, J. De Yoreo

3:00 . Clusters of catalytic nanocompartments and Janus nanoparticles as spaces for complex reactions. **C.G. Palivan**

3:20 . Macrophage transport with helical microrobots: Cell attachment, locomotion, and delivery through mucus. **R. Raj**, N. Day, N. Loomis, E. Cutting, A. Gupta, C. Shields IV

3:40 . Slippery nanoemulsion-infused polymer coatings that enable the loading and release of water-soluble bioactive agents. **L.J. Quinn**, J. York, A.E. Nelson, T. Polaske, H. Agarwal, H.E. Blackwell, D.M. Lynn

4:00 . Cell culture substrates functionalized with glycosaminoglycan-mimetic polymer brushes to augment human mesenchymal stem cell self-renewal. **C. Nelson**, C. Castellion, R. Kumar

Sheraton Denver Downtown Hotel
Governor's Square 17

Surface Chemistry

Surface Mechanisms

H. Cornell, C. R. Kasprzak, A. V. Teplyakov, L. Tribe, *Organizers, Presiding*

2:00 Introductory Remarks.

2:05 . Thin films of Cu-paddlewheel metal-organic frameworks: Characterizing and tuning film properties. **M.E. Anderson**

2:25 . Computational study on double nitrogen doping along armchair and zigzag directions on graphene. **T. Dinadayalane**, N. Alzaaqi, R. Shanmugam

2:45 . Sub-micron infrared and Raman spectromicroscopy of electron-beam modified metal organic frameworks. **S. Tenney**, A. Kraetz, J.I. Siepmann, M. Tsapatsis

3:05 . Elucidating the mechanism of siloxane poisoning of semiconducting metal oxides. **S. Astle**, K.R. Rafiq

3:25 . Changes in the gold oxidation state during the catalytic decomposition of dimethyl methylphosphonate over a Au/TiO₂ aerogel. **K.N. Knight**, J.R. Morris

3:45 . Withdrawn

4:05 Concluding Remarks.

Sheraton Denver Downtown Hotel
Director's Row H

Colloidal Nanoparticles in Materials Synthesis

M. R. Jones, R. Macfarlane, J. Millstone, *Organizers, Presiding*

2:00 . Hybrid organic/inorganic materials based on colloidal nanoparticles to advance catalysis and energy technologies. **R. Buonsanti**

2:30 . Diffusion-controlled rate estimate for oriented attachment at a flat surface. **B. Peters**, R. Addula

3:00 Break.

3:15 . Total synthesis of composition-tunable nanoparticle libraries. **R.E. Schaak**

3:45 . Self-assembly of electrostatically-stabilized nanocrystals into strongly electronically coupled supercrystalline solids. **D. Talapin**

4:15 Break.

4:30 . Hypothesis driven control of transition metal sulfide phase in colloidal synthesis. J. Espano, P. Edwards, R. Hinojosa, J. Veglak, **J. Macdonald**

5:00 . Revisiting concepts of nucleation and growth in multimetallic nanoparticles. **J. Millstone**

Sheraton Denver Downtown Hotel
Director's Row E

Frontiers & Challenges in Nanoparticle-Mediated Chemical Transformations

Interface

W. Huang, Y. Sun, J. Zhao, *Organizers, Presiding*

2:00 . New understanding of structures of surface and interface of electrocatalysts for high activity and stability. **H. Yang**

2:30 . Interfacial self-assembly of hierarchically structured nanoparticles with photocatalytic activity. **H. Fan**

3:00 . Understanding the dynamic configuration of electrocatalysts at solid-liquid interface. **H. Chen**

3:30 Break .

4:00 . Use of organic monolayers to control metal-support interactions on supported metal catalysts. **J.W. Medlin**

4:30 . Transformative synthesis of semiconductor nanoclusters with atomic precision. **C. Zeng**

5:00 . Recyclable palladium nanoparticles for the room-temperature, light-induced Ullmann homocoupling of aryl halides. **G. Vile**

Sheraton Denver Downtown Hotel
Governor's Square 16

Recent Development of Polymer Interface & Polymer Thin Film Preparation, Characterization & Modeling

Polymer Membranes, Interfaces & Thin Films

Z. Chen, T. Kuo, T. Wei, *Organizers, Presiding*

2:00 . Interfacial polymerization of aromatic polyamide reverse osmosis membrane. **S. Zheng**, T. Wei, B.S. Hsiao

2:30 . Membrane composition changes energetics of nano-plastic entry. **A. Acharya**

3:00 . Homopolymer PPSU for nanotherapy. **B. Qiao**

3:30 . Molecular modeling of polymeric metamaterials. **J.R. Gissinger**

4:00 . Effect of two-dimensional distribution of interfacial conformation of polymer chains on its adhesion strength. **T. Abe**, K. Tanaka

4:30 . Interphase characterization in H-bonded polymer-nano solid systems. **F.D. Blum**, R. Azarfam, I. Jayalath

5:00 . Molecular interactions of PFAS on polyamide membranes using atomistic molecular dynamics simulations. **R. Gambarini**, M.J. Uline, T. Wei

5:20 . Development of functionalizable film by using substrate-independent surface coating method. **S. Park**, D. Hong

Sheraton Denver Downtown Hotel
Plaza Ballroom D

Interfacial Phenomena & Dynamics in Electrochemical Systems

J. Frechette, M. A. Gebbie, A. Gupta, *Organizers, Presiding*

2:00 . Surface forces in highly concentrated electrolytes. **R.M. Espinosa-Marzal**

2:40 . Ion clusters and the electrical double layers in water-in-salt electrolytes (WiSE). S. Berlinger, P. Dudenas, V. Kupers, D. Schinski, L. Flagg, B. McCloskey, M. Winter, **J. Frechette**

3:00 . Linking electric double layer formation to electrocatalytic activity. **M.A. Gebbie**

3:20 . Understanding cation effects in nitrate electroreduction. **K.A. Stoerzinger**

4:00 Break.

4:20 . Ion transport in confinement. **M. Olvera De La Cruz**, A. Shrestha, F. Jimenez-Angeles

5:00 . Kirchhoff's laws get an upgrade: Double-layer dynamics in pore networks described by a de Levie circuit for an effective electrochemical potential of charge. **F. Henrique**, P.J. Zuk, A. Gupta

5:20 . Force fields with potential: Simulating reactions at working electrodes with constant potential machine learned force fields. **A. Dodin**, D. Limmer, P.L. Geissler

5:40 . Effects of confinement in silica nanopores on diffusion of iron redox probes in a choline chloride / ethylene glycol deep eutectic solvent. **S. Rankin**, A. Drake, B. Knutson, D. Kim

Sheraton Denver Downtown Hotel
Director's Row I

Nanomaterials

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

2:00 . Mechanism-based particle-size and particle-size distributions via minimum, disproof-based, pseudo-elementary-step mechanism determination, then mechanism-enabled population-balance modeling. **R.G. Finke**

2:20 . Nanoimaging of water bending and carboxylate stretching modes in colloidal nanocrystal films. **W. Takele**, T. Habteyes

2:40 . Triplet–triplet annihilation upconversion-based oxygen sensors to overcome the limitation of autofluorescence in biological systems. **A. Mendonsa**, K.J. Cash

3:00 . Morphology evolution in polymer-grafted nanoparticle blends with the addition of ionic liquid. **A. Gul**

3:20 . Role of ligand-induced surface stresses in controlling shapes of ultrathin colloidal nanoplatelets. **S. Dutta**, D. Monego, D. Grossman, A. Widmer-Cooper, B. Abecassis

3:40 . New dimensions in colloidal nanomaterials characterization: Rapid measurements of individual nanoparticle masses directly from solution using charge detection mass spectrometry. **C.C. Harper**, T. Schloemer, Z.M. Miller, D. Congreve, E.R. Williams

4:00 . Symmetry breaking and ferroelectricity in hybrid supramolecular/covalent polymers. **B. Johnson**, N. Pogharian, M. Olvera De La Cruz, S.I. Stupp

4:20 . Secondary structures of magnetic nanoparticles offer diverse nano-magnetism for Advanced Biomedical applications. **M. Nguyen**, S.B. Attanayake, M. Fuller, S. Hoijang, L. Deng, C. Chu, M. Phan, T. Lee

4:40 . Multimodal magnetic-fluorescent composites for biomedical applications. **M. Ghariani**, F. Nathan, Y. Gunko

5:00 . Near-infrared fluorescent polymersomes for blood ammonia sensing at the point-of-care. **S. Matoori**

5:20 . Thermodynamics of nitrocatechol ligand interactions with magnetic oxide nanocrystals. **J.M. Burrell**, A.B. Greytak

5:40 . X-ray photoelectron spectroscopy studies of interfacial interactions of ionic liquids confined in silica mesopores. **B. Knutson**, A. Drake, S. Rankin

Zoom
Virtual Session

Global Virtual Symposium on Chemical Nanomotors: Frontiers & Opportunities

Understanding, Making & Controlling Nanomotors

K. R. Chaturvedi, N. Jha, P. Johri, S. Maiti, W. Wang, *Organizers, Presiding*

9:30 . Microrobots go in-vivo: From test tubes to live animals. **J. Wang**

10:00 . Spontaneous motion of isotropic colloids in a Carreau fluid. **S. Das**, S. Shreekrishna, S. Mandal

10:15 . Self-powered supramolecular assembly: A tale of chemical powered motion. **D. Patra**

10:30 . Green algae-based biohybrid microrobots towards in vivo biomedical applications. **Z. Li**

10:40 . Generation of autonomous μ rotors of isotropic geometry. **V. Kaur**, C. Taneja, S.S. Khuntia, A. Chaudhuri, S. Rakshit

10:50 . Light-driven fuel-free colloidal motors with inertia-like motion. **Z. Jiayu**

11:00 . Tunable self-thermophoretic nanomotors with polymeric coating. **H. Yaxin**, J. Tang

11:10 . Flow oscillation and spatiotemporal patterning by light driven micropumps. **D. Singh**, D. Patra

11:20 . Micropumps and micromotors from smart ionogels of light-triggered release. **D. Cao**, W. Wang

11:30 . Velocity control of hematite-TPM photoactive colloids with triethanolamine. **L. Ruiyao**

11:40 . Designing cutting-edge multifunctional micromotors for on-demand customizable propulsion. **S. Panda**, S. Debata, K. Charan Andia, S. Das, D. Singh

THURSDAY MORNING

Zoom

Virtual Session

Global Virtual Symposium on Chemical Nanomotors: Frontiers & Opportunities

Understanding, Making & Controlling Nanomotors

K. R. Chaturvedi, N. Jha, P. Johri, S. Maiti, W. Wang, *Organizers, Presiding*

5:30 . Nanomotors as active matter: A reflection on the conceptual developments. **R. Golestanian**

6:00 . Using lateral force microscopy to investigate motion at the atomic scale. **A.J. Weymouth**, E. Riegel, B. Simmet, O. Gretz, F. Giessibl

6:15 . Janus colloid like active motion observed for symmetrical catalytic colloids. **S. Ebbens**, R. Archer

6:30 . Reactive, cargo-carrying and biodegradable magnetic micropropellers. **F. Peter**, L. Motyčková, D. Missirlis, M. Alarcón-Correa, P. Fischer

6:40 . Chemical logic gates on active colloids. **R. Kapral**, J. Chen, J. Hu

7:10 . Automated control of chemical nanomotors. **S. Das**

7:30 . Multivalent interaction-mediated colloidal propulsion and self-organization in nucleotide gradient. **E. Shandilya**, B. Rallabandi, S. Maiti

Sheraton Denver Downtown Hotel
Plaza Ballroom D

Active & Responsive Matter

B. Bharti, S. Kamdar, *Organizers, Presiding*

8:00 . Actuation of liquid metals. **K. Kalantar-Zadeh**

8:30 . High intensity focused ultrasound-mediated transport of phospholipid-coated, hydrophobically modified mesoporous silica microspheres in biological fluids. **T.B. Alina**, S.A. Saemundsson, L.E. Mortensen, J.N. Cha, A.P. Goodwin

8:45 . Programmable cargo release from jet-printed microgel particles via an in situ ionic exchange method. **R. Ma**, S. Park, **A. Liu**

9:00 . Engineering photo-responsive surface buckling in PEG hydrogels via coumarin functionality. **A. VanZanten**, S. Punhani-Schillinger, R. Ferrier, C. Szczepanski

9:15 . Environmentally responsive liquid crystal emulsions stabilized by amphiphilic gold nanoparticles. **O.H. Piñeres-Quiñones**, M.K. Oñate-Socarras, F. Wang, D.M. Lynn, C. Acevedo-Velez

9:30 . Multiresponsive chiral nanocomposites made of plasmonic and magnetic nanoparticles in liquid crystal systems. **M. Wojcik**, A. Jedrych, E. Tomczyk, E. Gorecka, W. Lewandowski

9:45 . Electrochemical impedance spectroscopy response from pH and salt of surface-modified elastin-like polymers. **H. Roell**, K. Jovic, C. Curley, E.M. Balog, J.M. Halpern

10:00 . Withdrawn

Sheraton Denver Downtown Hotel
Governor's Square 16

Biomaterials & Biointerfaces

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

8:00 . Chiral induction in biocompatible 2D borophene nanoplatelet through stereoselective boron-sulfur conjugation. **T. Aditya**, P. Moitra, M. Alafeef, D. Skrodzki, D. Pan

8:20 . Withdrawn

8:40 . Exploring hypoxia modulation via DNA-driven spheroid architectures. **S. Saemundsson**, S. Curry, B. Bower, E. DeBoo, A.P. Goodwin, J. Cha

9:00 . Alginate-rich coacervates for specific drug delivery to macrophages. A. Delzendehrooy, **H. Safari**, S. Mashayekhan

9:20 . Self-assembling and H₂O₂-triggered self-immolative retinoic acid prodrugs with multiple therapeutic actions. **D. Lee**, N. Song, N. Kim, H. Jo

9:40 . Enhanced cancer therapy and metastasis inhibition via targeted delivery and functionalization of mesoporous silica nanoparticles. **P. Chen**

10:00 . Lipid-polymer hybrid nanoparticle depots for sustained gene delivery and mRNA-based vaccine development. **X. Xu**

Sheraton Denver Downtown Hotel
Governor's Square 17

Surface Chemistry

Carbon & Silicon-Based Materials

H. Cornell, C. R. Kasprzak, A. V. Teplyakov, L. Tribe, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 . Withdrawn

8:25 . Spectrokinetic insights into the effect of H₂O on silylation of silica filler. **Y. Guo**, D.W. Flaherty, X. Chen, F. Rainer, K. Froeschle

8:45 . Withdrawn

9:05 . Vibrational spectra of ZIF-8: Identifying peaks and defect signals. **M. Ahmad**, R. Patel, D. Lee, P. Corkery, A. Kraetz, J.I. Siepmann, M. Tsapatsis, J. Boscoboinik

9:25 Intermission.

9:40 . Air-interfaces passivation of superconducting quantum circuits by self-assembled monolayers to suppress the growth of oxides. **S.G. Rao**

10:00 . Surface modification of silica particles for an effective mucosal transport. **K. Cureno Hernandez**, J. Lee, S. Kim, Z. Cartwright, M. Herrera-Alonso

10:20 . Mesoporous silica as a sorbent and pre-concentrator for volatile organics and emerging contaminants. **N.F. Materer**, E. Kadossov, A. Caesar, R. Shrestha

10:40 Concluding Remarks.

Sheraton Denver Downtown Hotel
Terrace

Colloid & Surface Chemistry in Energy & Sustainability

Energy Systems

M. Karayilan, C. Wirth, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 . Energy storage and conversion in materials and devices made from colloids and liquids. **B. Helms**, T.P. Russell

8:45 . Characterizing the influence of surfactant adsorption on the electrical properties of flowing carbon black slurries important to flow battery applications. K. Lee, **C. Wirth**

9:05 . Keep the ligands: Potential benefits for fuel cell performance. A. Molina Villarino, **J.L. Rowell**, D. Yoon, Q. Li, Y. Jia, Z. Shi, J. Soto, J. Koldobskiy, D. Muller, R.D. Robinson, H.D. Abruna

9:25 . Mechanistic insight into Fe anode for aqueous battery from surface science view. **X. Zhao**, E. Carlson, A. Burgos, W. Chueh

9:45 Intermission.

9:50 . Understanding fuel-cell and water-electrolyzer catalyst-layer performance: Insights from colloidal precursor inks. **S. Berlinger**, A. Chowdhury, X. Peng, A. Kusoglu, A.Z. Weber

10:30 . Withdrawn

10:50 . Controlling hydrophilic microenvironment of electrodes for efficient and durable water electrolysis. Y. Kang, S. Lee, D. Lee, **J. Ryu**

Sheraton Denver Downtown Hotel
Director's Row H

Colloidal Nanoparticles in Materials Synthesis

M. R. Jones, R. Macfarlane, J. Millstone, *Organizers, Presiding*

8:00 . On the emergence of complex phases in nanoparticle self-assembly. **M.R. Jones**

8:30 . Sensor materials. **T. Kraus**

9:00 Break.

9:15 . Colloidal methods for monodisperse complex metal sulfide nanoparticles. T.E. Meyer, **R.D. Robinson**

9:45 . Designing, benchmarking, and troubleshooting colloidal nanoparticle syntheses using *in situ* electroanalytical measurements. **M.L. Personick**

10:15 Break.

10:30 . Characterization of nanoparticle assemblies with coherent x-ray: simultaneous x-ray imaging and scattering. **B. Lee**, J. Deng, S. Seifert, J. McCourt, C.A. Mirkin

11:00 . Controlling the durability and optical properties of triplet-triplet annihilation upconversion nanocapsules. **T. Schloemer**, C. Harper, S. Sanders, P. Narayanan, Q. Zhou, M. Hu, E.R. Williams, D. Congreve

Sheraton Denver Downtown Hotel
Director's Row E

Frontiers & Challenges in Nanoparticle-Mediated Chemical Transformations

Nanomaterial for Chemical Transformation

W. Huang, Y. Sun, J. Zhao, *Organizers, Presiding*

8:00 . Seeded growth of plasmonic nanostructures in deformable polymer confinement. **Y. Yin**

8:30 . Withdrawn

9:00 . Improvement of water oxidation catalysis by modulation of electronic structure in layered materials. **M. Zdilla**, R. Ding, P. Yasini, H. Peng, J.P. Perdew, R. Sah, J.L. Mendoza-Cortes, D. Maldonado-Lopez, E. Borguet, J. Henebry, A. Dekshinamoorthy

9:30 Break.

9:50 . Nanocrystal-driven chemical transformation catalyzed by redox enzymes. **G. Dukovic**

10:20 . Processive ring-opening metathesis polymerization via molecularly confined catalysts. Z. Zhou, G. Giardino, W. Huang, **J. Niu**

10:50 . Nanoparticle catalysts for waste plastic up-cycling. **K. An**

11:20 . Exploring competitive adsorption behavior of polymer chains in silica nanopores by small angle neutron scattering (SANS). **X. Wang**, B. Lee

Sheraton Denver Downtown Hotel
Governor's Square 14

Interfacial Phenomena & Dynamics in Electrochemical Systems

J. Frechette, M. A. Gebbie, A. Gupta, *Organizers, Presiding*

8:00 . Dynamics of electrochemical cells in the thin Debye-layer-limit: impedance and beyond. R. Cobos, **A. Khair**

8:40 . Electrolyte transport in electrochemical capacitors: Impact of porous geometry and EDL-redox coupling. **A. Gupta**

9:00 . Effects of pore shape and roughness on charging dynamics of electrical double layers. **B. Rives**, F. Henrique, A. Gupta

9:20 Break.

9:40 . Forces, structures and ion dynamics in nano-confined and electrified solid/fluid/solid gaps. **M. Valtiner**

10:20 . Dynamic permittivity of confined water under a static background field. **D. Bratko**, N. Mulpuri

10:40 . Impact of electric field mediated fluid-thickening on electrokinetics over charge-modulated interfaces. **A. Bhattacharya**, S. Chakraborty

11:00 . Experimental studies of the capacitive potential region for ionic liquid: Electrode interfaces. **S.K. Shaw**, D.H. Duffy

Sheraton Denver Downtown Hotel
Plaza Court 2

Advanced In-Situ Imaging Methods for Colloidal Chemistry: Probing Interaction & Dynamics at the Nanoscale

Advanced Imaging for Nanoscale Assembly

Q. Chen, D. Li, Y. Xie, *Organizers, Presiding*

8:00 . New cryo-EM tools for studying dynamic interfaces in battery materials. **Y. Li**

8:30 . Visualizing hydrogel interfaces and their properties. **R.M. Espinosa-Marzal**

9:00 . Self-assembly at the protein-materials interface. **J. De Yoreo**, C. Shi, Y. Xia, X. Zhao, Z. Zhang, M. Zorman, S. Zhang, F.A. Tezcan, M. Salmeron, J. Pfaendtner

9:30 . “Virtual” imaging of nanoparticle self-assembly: Leveraging theory and simulation to bridge particle synthesis, emergent interactions, hierarchical organizations across scales. **T. Vo**

10:00 Intermission.

10:10 . Advances in liquid phase electron microscopy in revealing nanoscale interactions and self-assembly. **H. Zheng**

10:40 . Unveiling symmetry breaking of nanocrystals during self-catalytic etching with 4D liquid-phase electron tomography. **Z. Lyu**, L. Yao, C. Lange Bassani, M. Engel, Q. Chen

11:00 . Withdrawn

11:20 . Withdrawn

11:40 . Withdrawn

Sheraton Denver Downtown Hotel
Governor's Square 15

Nanomaterials

J. A. Hollingsworth, S. Hunyadi Murph, R. Nagarajan, S. Nuguri, C. M. Sims, D. Watkins,
Organizers
E. G. Bowes, *Presiding*

8:00 . Withdrawn

8:20 . Computational study of surface plasmonic resonances of liquid metal nanoparticles. **S. Jamalzadegan**, A. Velayati, M. Zare, M.D. Dickey, Q. Wei

8:40 . Understanding how nanoparticle - substrate interactions impact the localized surface plasmon resonance properties of gold and palladium nanoparticles deposited on steel and aluminum. **R.L. Calabro**, F. Burpo, S.F. Bartolucci, J.A. Maurer

9:00 . Withdrawn

9:20 . Sequentially bridged MXene architectures. **K. USMAN**, J. Razal

9:40 . Withdrawn

10:00 . Chiral light-matter interaction for plasmonic molecular chirality sensing. **J. Han**, R. Kim, K. Nam

10:20 . Biocompatible chiral gold nanoparticles with stable high-Miller-index facets via silica coating method. **I. Ha**, K. Nam

10:40 . Withdrawn

11:00 . Withdrawn

11:20 . Bottom-up approach to synthesis of Heteroatom-doped carbon-based quantum dots. L. Asgarkhani, N. Portal, **S. Chatterjee**

11:40 . Lighting up non-luminescent DNA copper nanoclusters via protein encapsulation: The role of protein characteristics. **M. Munde**, P. Negi

Sheraton Denver Downtown Hotel
Director's Row I

Surfaces & Interfaces in Chemical & Biological Systems: Symposium in honor of Hai-Lung Dai

Membranes & Biological Systems

E. Borguet, G. V. Hartland, T. Lian, *Organizers*
E. C. Yan, *Presiding*

8:00 . Detecting interplay of chirality, water, and interfaces. **E.C. Yan**

8:30 . Withdrawn

9:00 . Dynamics and mechanism of water-protein interactions and dynamics. **D. Zhong**

9:30 . Size-dependent condensation and oxidation reactions in aqueous microdroplets. **V.H. Grassian**

10:00 . Peptide and water chirality studied with sub-wavenumber high-resolution broadband sum-frequency vibrational spectroscopy. **H. Wang**

10:30 . Structural dynamics of interfacial ion recognition investigated by nonlinear vibrational spectroscopy. **H. Bian**

11:00 . Probing chemical reactions at buried polymer interfaces using sum frequency generation vibrational spectroscopy. **Z. Chen**

11:30 . Site-specific interrogation of protein structure and dynamics. **F. Gai**

Zoom
Virtual Session

Basic Research in Colloids, Surfactants & Interfaces

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

10:00 . Effects of oil-soluble/water-soluble surfactant on the interaction between silicon dioxide particle and water droplet in n-tetradecane. **F. Xiao**, W. Wang

10:20 . Colloidal zero and two dimensional SnS monolayers with enhanced optoelectronic properties. **A. Sarkar**

10:40 . Aqueous binary mixtures of stearic acid and its hydroxylated counterpart 12-hydroxystearic acid: Cascade of morphological transitions. **M. Almeida**, D. Dudzinski, J. Guigner, S. Prévost, C. Amiel, F. Cousin, C. Le Coeur

11:00 . Surfactants as corrosion inhibitors: A review with particular emphasis on green surfactants. **C. Verma**

11:20 . Non-additive ion effects of tetra alkyl ammonium iodide salts in aqueous macromolecules. **E. Issever**, H. Okur

11:40 . Effect of sub-surface structure on ice adhesion strength. **T. McCoy**, W. Wang

12:00 . Surface lattice resonances from self assembly of ordered colloids for interfacial transfer of metasurfaces. **D.K. Roper**, K. Berry