SYMPOSIUM ED14

Molecular and Colloidal Plasmonics—Synthesis and Applications
April 18 - April 20, 2017

Symposium Organizers
Jingyi Chen, University of Arkansas
Radha Narayanan, DesignPure NanoCryst, LLC
Svetlana Neretina, University of Notre Dame
Anatoliy Pinchuk, University of Colorado-Colorado Springs

Symposium Support
MilliporeSigma

Proceedings Statement
All authors are invited to submit articles based on their 2017 MRS Spring Meeting presentations to the journals in the MRS portfolio (www.mrs.org/publications-news). Papers submitted and accepted for publication in MRS Advances (www.mrs.org/mrs-advances) will be available as symposium collections. Visit the MRS/Cambridge University Press Publications Booth #100 in the Exhibit Hall to learn more, including MRS Advances print options available at special rates during the meeting week only.

* Invited Paper

SESSION ED14.1: Design and Plasmonic Tuning
Session Chairs: Jingyi Chen and Svetlana Neretina
Tuesday Morning, April 18, 2017
PCC North, 100 Level, Room 130

10:30 AM *ED14.1.01
Rational Design and Plasmonic Tuning of Noble Metal Nanostructures Yadong Yin; University of California, Riverside, United States.

11:00 AM *ED14.1.02
Surface Chemistry of Gold Nanorods Catherine J. Murphy; University of Illinois at Urbana-Champaign, United States.

11:30 AM ED14.1.03
Synthesis and Magnetic Manipulation of Anisotropic Magnetic/Plasmonic Nanocomposites Xiaojing Wang[1,2]; [1]University of California Riverside, United States; [2]University of California Riverside, United States.

11:45 AM ED14.1.04
Magnetite Functionalization of Silica-Overcoated Gold Nanorods via Controlled Heteroaggregation Brian S. Chapman; North Carolina State University, United States.

SESSION ED14.2: Tailoring Plasmonic Activity
Session Chairs: Jingyi Chen and Svetlana Neretina
Tuesday Afternoon, April 18, 2017
PCC North, 100 Level, Room 130

1:30 PM *ED14.2.01
Triangular Silver Nanoprism Based Nanostructures—Synthesis, Optical Properties and Applications Can Xue; Nanyang Technological University, Singapore.

2:00 PM *ED14.2.02
Combining Bottom Up with Top Down for Tailoring Plasmonic Activity Jennifer S. Shumaker-Parry; University of Utah, United States.

2:30 PM ED14.2.03
Shape-Engineering Complex Nobel Metal Nanostructures through the Integration of Seed-Mediated Colloidal Syntheses with Substrate-Based Fabrication Techniques Robert Hughes; University of Notre Dame, United States.

2:45 PM ED14.2.04
Microfluidic Colloidal Nanorods Array Alignment for Circulating Biomarker Detection Amogha Tadimety; Dartmouth College, United States.

3:00 PM BREAK

3:15 PM ED14.2.05
Electronic Behavior of Fluorophore Modified Superatom Gold Clusters Mary Sajini Devadas; Towson University, United States.

3:30 PM *ED14.2.06
Stress Induced New Plasmonic Nanostructures Hongyou Fan[1,2]; [1]Sandia National Laboratories, United States; [2]University of New Mexico, United States.

4:00 PM *ED14.2.07
General Strategy to Control High Index Facet of Plasomonic Nanoparticle Ki Tae Nam; Seoul National University, Korea (the Republic of).

4:30 PM ED14.2.08
Electrohydrodynamic Flow as a Driving Force for the Directed Chemical Assembly of Plasmonic Metasurfaces Will Thrift; University of California, Irvine, United States.

4:45 PM ED14.2.09
In-Line Linear and Non-Linear Optical Spectroscopy of Plasmon Resonant Nanoshells Grown in a Continuous Flow Microreactor Robin N. Klupp Taylor[1,4,5]; [1]Friedrich-Alexander-University of Erlangen-Nürnberg, Germany; [4]Friedrich-Alexander-University of Erlangen-Nürnberg, Germany; [5]Friedrich-Alexander-University of Erlangen-Nürnberg, Germany.

SESSION ED14.3: Poster Session I: Synthesis and Applications of Plasmonic Nanomaterials
Session Chairs: Jingyi Chen, Radha Narayanan, Svetlana Neretina and Anatoliy Pinchuk
Tuesday Afternoon, April 18, 2017
8:00 PM - 10:00 PM
Sheraton, Third Level, Phoenix Ballroom

ED14.3.01
Metal Nanocrystals with Plasmon Tunable in the Infrared Region and Their Application for Surface-Enhanced Infrared Absorption Nannan Li; The Chinese University of Hong Kong, China.

ED14.3.02
Facile Synthesis of Oleylamine-Capped Silver Nanowires and their Application in Transparent Conductive Electrodes Yiqun Zheng; Shandong University, China.

ED14.3.03
Understanding and Controlling the Morphology of Silica Shells on Gold Nanorods Brian S. Chapman; North Carolina State University, United States.

ED14.3.04
Laser-Induced Periodic Metal Structures for Excitation of Surface Plasmons and for Sensing Applications Igor Dmitruk[1,2]; [1]National Taras Shevchenko University of Kyiv, Ukraine; [2]Institute of Physics, Ukraine.

ED14.3.05
Colloidal Gold Nanoring-Based Structures for Magnetic Plasmon Resonance Tsz Him Chow; The Chinese University of Hong Kong, Hong Kong.

ED14.3.06
Chemical Synthesis of Gold Nano-Bars for Optical Circuitry Applications Erik Hobbs; Towson University, United States.

ED14.3.07
Porous Ag-Au Bimetallic Alloy Nanoparticles for Surface Enhanced Raman Scattering Nisha Kero; Indian Institute of Technology Delhi, India.

ED14.3.08
Indium Nanoparticles for Ultraviolet Surface-Enhanced Raman Scattering Rupali Das; Indian Institute of Technology Delhi, India.

ED14.3.09
Effect of Liquid Medium on Size, Shape and Stability of Gold Nanoparticles Synthesized by Pulsed Laser Ablation Luis M. Angelats Silva; Universidad Privada Antenor Orrego, Peru.

ED14.3.10
Precisely Size-Tunable Monodisperse Hairy Plasmonic Nanoparticles via Amphiphilic Star-Like Block Copolymers Yihuang Chen; Georgia Institute of Technology, United States.

ED14.3.11
***In Situ* Optical Spectroscopy and Electrodynamic Simulation Study of the Growth of Curved Plasmonic Nanocrystals** Robin N. Klupp Taylor[1, 5, 6]; [1]Friedrich-Alexander-University of Erlangen-Nürnberg, Germany; [5]Friedrich-Alexander-University of Erlangen-Nürnberg, Germany; [6]Friedrich-Alexander-University of Erlangen-Nürnberg, Germany.

ED14.3.12
Gold Nanoparticle Plasmon Resonance in Near-Field Coupled Au NPs Layer/Al Film Nanostructure—Dependence on Metal Film Thickness Oleg Yeshchenko; National Taras Shevchenko University of Kyiv, Ukraine.

SESSION ED14.4: Designing Bimetallic Plasmonic Nanostructures
Session Chairs: Jingyi Chen and Svetlana Neretina
Wednesday Morning, April 19, 2017
PCC North, 100 Level, Room 130

8:00 AM *ED14.4.01
Crystal Phase-Controlled Synthesis of Novel Noble Metal Nanomaterials Hua Zhang; Nanyang Technological University, Singapore.

8:30 AM *ED14.4.02
Synthesis of Alloyed Nanoparticles with Mixed Concave-Convex Surfaces Michelle L. Personick; Wesleyan University, United States.

9:00 AM *ED14.4.03
Seeding Stellated Au-Pd Nanocrystals as Colloids with High Refractive Index Sensitivity Sara E. Skrabalak; Indiana University Bloomington, United States.

9:30 AM ED14.4.04
A Pragmatic Approach to Gold Nanostars—Unique Design, Advanced Synthesis and Novel Characterization Laura Fabris; Rutgers University, United States.

9:45 AM ED14.4.05
Plasmonic Nanostructures as Anti-Counterfeit Tags and Environmental Sensing Platforms Alison Smith; Naval Surface Warfare Center, Crane Division, United States.

10:00 AM BREAK

10:30 AM *ED14.4.06
Enriching the Ag Nanocrystals with Other Noble Metals Dong Qin; Georgia Institute of Technology, United States.

11:00 AM *ED14.4.07
Synthesis and Characterization of Pt−Ag Hollow Nanocrystals with Enhanced Catalytic Activity and Durability Jing Zhao; University of Connecticut, United States.

11:30 AM ED14.4.08
Gold Cubic Nanoboxes with Plasmonic Absorption in the Near-Infrared Region Xiaojun Sun; Georgia Institute of Technology, United States.

11:45 AM ED14.4.09
Gold Nanotriangles Decorated with Superparamagnetic Iron Oxide Nanoparticles Anna Roig; Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Spain.

SESSION ED14.5: Designing Nanomaterials for Plasmonics and SERS
Session Chairs: Radha Narayanan and Anatoliy Pinchuk
Wednesday Afternoon, April 19, 2017
PCC North, 100 Level, Room 130

1:30 PM *ED14.5.01
Shape-Controlled Synthesis of Copper Nanocrystals Younan Xia; Georgia Institute of Technology, United States.

2:00 PM ED14.5.02
Enhancing the Stability and Localized Surface Plasmon Resonance of Cu Nanostructures with Thin Silica Shells Cameron C. Crane; University of Arkansas, United States.

2:15 PM ED14.5.03
Plasmonics at the Cluster Limit—Dielectric Sensing with DNA-Stabilized Silver Clusters Stacy Copp; University of California, Santa Barbara, United States.

2:30 PM BREAK

3:30 PM *ED14.5.04
Designing Nanomaterial Rattles for Plasmonics and SERS Amanda J. Haes; University of Iowa, United States.

4:00 PM *ED14.5.05
Challenges in Applying SERS to Quantitative Bioanalytical Measurements Marc Porter; University of Utah, United States.

4:30 PM *ED14.5.06
Lipid Membrane Molecular Structures from Surface Enhanced Raman Scattering Jason H. Hafner; Rice University, United States.

SESSION ED14.6: Poster Session II: Synthesis and Applications of Plasmonic Nanomaterials
Session Chairs: Jingyi Chen, Radha Narayanan, Svetlana Neretina and Anatoliy Pinchuk
Wednesday Afternoon, April 19, 2017
8:00 PM - 10:00 PM
Sheraton, Third Level, Phoenix Ballroom

ED14.6.01
A Process for the Large Scale Synthesis and Separation of Silver Nanowires Amol Kulkarni; National Chemical Laboratory, India.

ED14.6.02
Plasmonic Study of FeS_2/Au and FeS_2/Ag Nanoparticles Rick Eyi; University of Arkansas, United States.

ED14.6.03
Plasmonic Arrays of Metallic Nanoparticles Fabricated by Evaporative Patterning Using a Mask of Colloidal Silica Particles Juan-Carlos Cheang-Wong; Instituto de Física, Universidad Nacional Autónoma de México, Mexico.

ED14.6.04
Large-Scale and Size-Tunable Synthesis of Silver Nanoparticle via Stepwise Thermal Decomposition of Silver Oxalate toward Fabrication of Multi-Colored Plasmon Film Takanari Togashi; Yamagata University, Japan.

ED14.6.05
Gold Nanoparticle Plasmon Resonance in Electrodynamically Coupled Au NPs Monolayer/Dielectric Spacer/Al Film Nanostructure—Tuning by Variation of Spacer Thickness Oleg Yeshchenko; National Taras Shevchenko University of Kyiv, Ukraine.

ED14.6.06
Gold Cuboctahedral Nanoboxes with Plasmonic Absorption at Near-Infrared Wavelength Junki Kim; Georgia Institute of Technology, United States.

ED14.6.07
Catalytically-Active Plasmonic Copper Nanostructures Jingyi Chen; University of Arkansas, United States.

ED14.6.08
Ag-Au-Pt Cubic Nanoboxes and Their Plasmonic and Catalytic Properties Zhiwei Zhang[1, 2]; [1]Georgia Institute of Technology, United States; [2]Xiamen University, China.

ED14.6.09
Large Scale Synthesis of Ag Nanoparticles and Their Applications in Catalysis Xiaojun Sun; Georgia Institute of Technology, United States.

ED14.6.10
Resonant Coupling between Molecular Vibrations and Localized Surface Plasmon Resonance of Faceted Metal Oxide Nanocrystals Ajay Singh[1, 2]; [1]Los Alamos National Laboratory, United States; [2]University of Texas at Austin, United States.

ED14.6.11
Au Coated SPIO-Core Nanoparticles with Tunable Shell Thickness to Promote Low-Level Laser Therapy at High Photothermal Conversion Efficiency Ya Wang; Stony Brook University, United States.

SESSION ED14.7: Plasmon-Assisted Processes
Session Chairs: Radha Narayanan and Anatoliy Pinchuk
Thursday Morning, April 20, 2017
PCC North, 100 Level, Room 130

8:00 AM *ED14.7.01
Controlling Single Atoms and Molecules in Ultrasmall Plasmonic Nanocavities Jeremy J. Baumberg; University of Cambridge, United Kingdom.

8:30 AM *ED14.7.02
Plasmon-Assisted Electrochemical Synthesis Martin Moskovits; University of California, Santa Barbara, United States.

9:00 AM *ED14.7.03
Plasmon Induced Catalysis Peter Nordlander; Rice University, United States.

9:30 AM ED14.7.04
Spatially Mapping the Reactivity of Plasmonic Nanoantennas Emiliano Cortes; Imperial College London, United Kingdom.

9:45 AM ED14.7.05
Polymer-Assisted Tuning of Surface Plasmons: From Applications to Fundamental Tao Ding; Cambridge University, United Kingdom.

10:00 AM BREAK

10:30 AM *ED14.7.06
Sensitivity of Plamonic Metal Nanoparticles and the Application in Polymer Sensing Guoliang Liu; Virginia Polytechnic Institute and State University, United States.

11:00 AM *ED14.7.07
Colloidal Gold Nanoplates and Their Plasmonic Properties Jianfang Wang; The Chinese University of Hong Kong, Hong Kong.

11:30 AM ED14.7.08
Immobilized Gold Core-Satellite Nanostructures for Highly Sensitive Refractive Index and Vapor Sensors Kensuke Akamatsu; Konan University, Japan.

11:45 AM ED14.7.09
Precision Plasmonics with Ideal and Non-Ideal Dimers of Noble Metal Nanoparticles—Theory and Experiment Jun Hee Yoon; University of Duisburg-Essen, Germany.

SESSION ED14.8: Non-Precious Material Plasmonics
Session Chairs: Radha Narayanan and Anatoliy Pinchuk
Thursday Afternoon, April 20, 2017
PCC North, 100 Level, Room 130

1:30 PM *ED14.8.01
Plasmonic Detection of Reactions on Nanostructures Eric Borguet; Temple University, United States.

2:00 PM *ED14.8.02
Molecular Plasmonics—Graphene Plasmonics at the Picometer Scale Naomi J. Halas; Rice University, United States.

2:30 PM ED14.8.03
Precise Control over the Morphology and Dopant Distribution in Colloidal Metal Oxide Nanocrystals Amita Singh; Los Alamos National Laboratory, United States.

2:45 PM ED14.8.04
Magnesium Plasmonic Nanoparticles in Water Peer Fischer[1, 3]; [1]Max Planck Institute for Intelligent Systems, Germany; [3]University of Stuttgart, Germany.

3:00 PM BREAK

3:30 PM *ED14.8.05
Probing and Manipulating Resonant Nanostructures with Chiral Light Mikael Kall; Chalmers University of Technology, Sweden.

4:00 PM *ED14.8.06
Photo-Thermal Control of Gold Nanoparticle Loaded Microgel Systems Dmitry N. Chigrin[1, 2]; [1]RWTH Aachen University, Germany; [2]DWI–Leibniz Institute for Interactive Materials, Germany.

4:30 PM ED14.8.07
Near-Infrared Plasmon - Plasmon and Plasmon - Vibration Coupling with Faceted Metal Oxide Nanocrystals Ankit Agrawal; The University of Texas at Austin, United States.

4:45 PM ED14.8.08
Adjusting the Localized Surface Plasmon Resonance in Degenerately Doped Colloidal Copper Chalcogenide Nanocrystals via Various Chemical Modifications Dirk Dorfs; Leibniz Universität Hannover, Germany.