
*The Mork Family Department
of Chemical Engineering and
Materials Science*

**Twelfth Annual
Student Research Symposium**

Friday, November 11, 2016
Montgomery Ross Fisher Building
MRF 340

2016 MFD STUDENT SYMPOSIUM JUDGES

Dr. Ying Li, *Argonne National Laboratory*

Dr. Christina Naify, *Jet Propulsion Laboratory*

Prof. Lili Yang, *UCLA*

Dr. Ali Mehrabi, *Avery Dennison Corporation*

Prof. Jalal Torabzadeh, *CSULB*

Dr. Scott W. McGurk, *California Division of Oil, Gas, And Geothermal Resources*

USC Viterbi

School of Engineering

Schedule

8:50 am **OPENING REMARKS**

9:00 am **RESEARCH TALKS**

- 9:00 AM Zhongtang Li
Membrane Reactors for Equilibrium-Limited Alcohol and Light Hydrocarbon Synthesis
(with Prof. Tsotsis)
- 9:15 AM Boju Gai
Multilayer-Grown Ultrathin Nanostructured GaAs Solar Cells with Uniform Interlayer Efficiencies Towards Cost-Competitive III-V Photovoltaics
(with Prof. Yoon)
- 9:30 AM Renuhaa Asaithambi
Coupled flow and geomechanical study of rainfall-induced episodic slow-slip events and ground deformation in the Main Himalaya Thrust region
(with Prof. Jha)
- 9:45 AM Lu Wang
Investigating biomembrane-nanoparticle interactions with giant vesicles fabricated from inverted-headgroup lipids
(with Prof. Malmstadt)
- 10:00 AM Michele Lee
Wearable, power-free UV dosimeter based on photoresponsive polymer
(with Prof. Armani)
- 10:15 AM Devang Dasani
Adsorption, Desorption and Flow Phenomena of Methane -Ethane Binary Gas Mixtures in Shale Powder and Whole Core Samples
(with Prof. Jessen)
- 10:30 AM Mark De Luna
Modification of Parylene-C substrates using Photoinitiated Chemical Vapor Deposition
(with Prof. Gupta)
- 10:45 AM Hassan Dashtian
Pore Network Simulation of Drying Induced Salt Precipitation in Porous Media: the Effect of Correlation
(with Prof. Sabemi)
- 11:00 AM Natnaree Siriwon
Adoptive Transfer of CAR-Engineered T Cells with Surface-Conjugated Synthetic Nanoparticles Containing Small Molecule Inhibitors for Reversing Intratumoral T Cell Hypofunction
(with Prof. Wang)
- 11:15 AM Alisha Deshpande
Robust Methods for Modelling Process Data from Oil and Gas Facilities
(with Prof. Qin)

11:40 AM **LUNCH AND POSTER SESSIONS**

2:15 PM **AWARDS CEREMONY**

Graduate Posters

Andre Kovach
**Red Microlaser Based on
Samarium-Doped Optical Resonator**
(with Prof. Armani)

Hyungwoo Choi
**High Efficiency Raman Laser Based on
Zr-doped Silica Sol-gel with Toroidal
Microcavity**
(with Prof. Armani)

Rene Zeto
**Multi-omics Systems Biology Analyses
for Understanding Cancer Metabolism**
(with Prof. Armani)

Vinh Diep
**Flexible light-emitting nanocomposite
based on ZnO nanotetrapods**
(with Prof. Armani)

Alireza Delfarah
**Development of targeted metabolomics
method for central carbon metabolism**
(with Prof. Graham)

DongQing Zheng
**Regulation Of Metabolic Protein
Phosphorylation In Cancer Cells**
(with Prof. Graham)

Golnaz Dianat
**Vapor Phase Fabrication of Hydrophilic
and Hydrophobic Asymmetric Polymer
Membranes**
(with Prof. Gupta)

Prathamesh Karandikar
**Fabrication of Ionic Liquid Gel beads via
Sequential Deposition**
(with Prof. Gupta)

Saro Meguerdijian
**Thermo-poro-mechanical Modeling of
Stress Changes and Seismicity in
Non-isothermal Reservoir Simulations**
(with Prof. Jha)

Qianru Qi
**A New Method for Geomechanical
Modeling of Subsidence Induced
Deformation in Fractured Rocks subjected
to Hydraulic Fracturing**
(with Prof. Jha)

Zumra Peksaglam
**Photo-Controlled siRNA and PTX
Co-Delivery Via Azobenzene Based
Catanionic Vesicles**
(with Prof. Lee)

Yu Wang
**Synthesis and characterization of Co-based
magnetic nanowires**
(with Prof. Lu)

Nareh Movsesian
**Chemical Vapor Deposition of Porous
Polymers in Modular Microfluidics for
Biomolecular Separations**
(with Prof. Malmstadt & Gupta)

Sarah G. Katz
**Enhanced Set-up for Out-of-Autoclave
Vacuum Bag Only Aerospace Composites
Manufacturing**
(with Prof. Nutt)

Cyrus Ashayeri
**Structural Differences in the Development
of Unconventional and Conventional
Resources**
(with Prof. Paul)

Tom Orvis
**Electron Mobility Improvement in SrTiO₃
Heterostructures**
(with Prof. Ravichandran)

Yang Liu
**An Integrated Theoretical and
Experimental Approach to Studying
Electro-optic properties of
(Ba_{0.85}Ca_{0.15})(Ti_{0.9}Zr_{0.1})O₃ Thin Films**
(with Prof. Ravichandran)

Shanyuan Niu
**Versatile Transition Metal Perovskite
Chalcogenides as Strong Solar Absorbers**
(with Prof. Ravichandran)

Graduate Posters

Nariman Piroozan

Atomistic Simulations of the Velocity-Dependence of the Kinetic Friction at a SiC/SiC Interface

(with Prof. Sabemi)

Mahsa Rahromostaqim

Swelling Properties of Carbon Dioxide intercalation in Mixed Illite-Montmorillonite clay from a molecular perspective

(with Prof. Sabemi)

Sahar Bakhshina

A numerical simulation of circulating tumor cells using immersed boundary-lattice boltzmann method

(with Prof. Sabemi)

Congyue Wang

Convolutional Neural Network for Structure-based Drug Discovery

(with Prof. Sabemi)

Ashkan Garshasbi

An Integrated 'One-Box' Process for Hydrogen Production

(with Prof. Tsotsis)

Zhuofan Shi

Measurement and modeling of CO₂ diffusion in brine at reservoir conditions

(with Prof. Tsotsis & Jessen)

Chunyang Sheng

Diffusion Study of Water Status in Dipicolinic Acid

(with Prof. Vashishta)

Pankaj Rajak

Anisotropic frictional heat dissipation in cyclotrimethylene trinitramine

(with Prof. Vashishta)

Ankit Mishra

Molecular Mechanisms in the shock induced decomposition of FOX 7

(with Prof. Vashishta)

Lauren Liaw and Huandong Chen

Enhanced Performance of Ultrathin Nanostructured Silicon Solar Cells Embedded in Hybrid Luminescent Medium of Spectral Upconversion and Downshifting

(with Prof. Yoon)

Dongseok Kang

Unassisted Solar Water Splitting with 13.2% Efficiency Enabled by Printed Assemblies of Epitaxially Grown Bifacial GaAs Photoelectrodes

(with Prof. Yoon)

Chenfei Shen

In situ transmission electron microscopy study of porous Si nanoparticles and investigation on porous Si-S full cells

(with Prof. Zhou)

Undergraduate Posters

Chase Choate

Synthesis of Cerium-doped thin films

(with Prof. Armani)

Martin Siron

Tuning Cleaving of Photo-Responsive Smart Polymer via Solvent-Polymer Interaction

(with Prof. Armani)

Omar S. Garcia

Synthesis of Zinc Oxide Nanowires

(with Prof. Armani)

Elyse Kedzie

Robust Catalyst in the Dehydrogenation of Neat Formic Acid

(with Prof. Williams)

Spencer Gilbert

Analyzing efficacy of sunscreen using flexible UV sensors

(with Prof. Armani)

Jessica Zhou

Multi-omics Systems Biology Analyses for Understanding Cancer Metabolism

(with Prof. Grabam)