

Natural Materials and Systems Program Review 2015

Dr. Hugh DeLong | December 7-11, 2015 | Destin, FL

Emerald Grande at HarborWalk Village
10 Harbor Blvd.
Destin, FL 32541

Day 1 | Monday, December 7, 2016

Time	Title of Project	Speaker
7:00-7:30	Registration	
7:30-8:00	Welcome, Introduction and Background	Hugh De Long and Katie Wisecarver , Air Force Office of Scientific Research
8:00-8:50	Theory-based design of synthetic genetic circuits incorporating biophysical models, stochastic dynamics, and evolutionary robustness	Hal Alper University of Texas, Austin
8:50-9:40	Electrochemical Imaging and Mechanistic Studies on the Nanometer Scale	Richard Van Duyne Northwestern University
9:40-10:10	BREAK	
10:10-10:45	Thin-Film Self-Assembly of Globular Protein-Polymer Diblock Copolymers	Bradley Olsen Massachusetts Institute of Technology
10:45-11:20	Extremophile Bacteria of the High Atacama Desert	Ralph Greenspan University of California, San Diego
11:20-12:50	LUNCH	
12:50-1:40	Combinatorial Screening of Emergent Nanophotonic Behavior through Biomolecule-Encoded Superlattice Formation	Vinayak David Northwestern University
1:40-2:15	Fundamental Studies of Biopolymerization and Reorganization	Paul Trulove United States Naval Academy
2:15-2:50	Microbial physiology, biofilms and polymer chemistry in biodeterioration of polyurethane polymers	Wendy Goodson/Justin Biffinger AFRL/NRL
2:50-3:20	BREAK	
3:20-3:55	Damage repair mechanisms of extreme halophiles to ionizing radiation	Jocelyne DiRuggiero Johns Hopkins University
3:55-4:30	Optimal Learning for Efficient Experimentation in Nanotechnology and Biochemistry	Warren Powell Princeton University
4:30-5:05	A Bacterial Factory for the Manufacturing of High-Strength Materials	Fuzhong Zhang Washington University
	ADJOURNED FOR THE DAY	

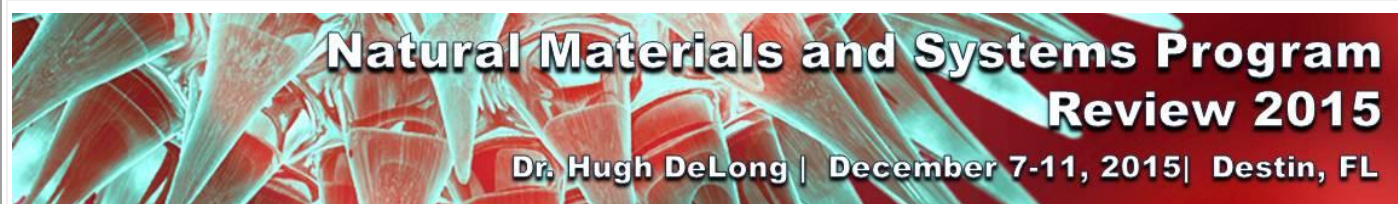
Natural Materials and Systems Program Review 2015

Dr. Hugh DeLong | December 7-11, 2015 | Destin, FL

Emerald Grande at HarborWalk Village
10 Harbor Blvd.
Destin, FL 32541

Day 2 | Tuesday, December 8, 2016

Time	Title of Project	Speaker
7:00-8:00	Registration	
8:00-8:35	Ultrastrong, Flexible, and Conductive Nanocomposites from Graphene Oxides and Biopolymers	Vladimir Tsukruk Georgia Institute of Technology
8:35-9:25	Bioprogrammable 1-, 2-, and 3-Dimensional Materials	George Schatz Northwestern University
9:25-9:55	BREAK	
9:55-10:30	Silk Matrices for Stabilization and New Functional Materials	David Kaplan Tufts University
10:30-11:05	Nanostructured Interfaces and Patterning Tools for Probing Bioinspired Materials and Systems	Chad Mirkin Northwestern University
11:05-11:40	Optically Reprogrammable Nanomaterials Assembly	David Ginger University of Washington
11:40-1:10	LUNCH	
1:10-2:00	BIOPAINTS: Bio-enabled Particle Adherents for Interrogative Spectroscopy	Carson Meredith Georgia Institute of Technology
2:00-2:35	Molecular dynamics, conformations, and interactions	Rae Anderson University of San Diego
2:35-3:10	Regulatory/Synthetic Control of Cellular Systems	Nancy Kelley-Loughnane AFRL
3:10-3:40	BREAK	
3:40-4:15	Macromolecular Modeling of Biomimetic Assembly	Murugappan Muthukumar University of Massachusetts, Amherst
4:15-4:50	Development and Characterization of Novel Bioluminescent Systems	Bruce Branchini Connecticut College
4:50-5:25	Biotic-abiotic interactions and assembly of bio-derived nanomaterials	Joe Slocik AFRL
	ADJOURNED FOR THE DAY	



Emerald Grande at HarborWalk Village
10 Harbor Blvd.
Destin, FL 32541

Day 3 | Wednesday, December 9, 2016

Time	Title of Project	Speaker
7:00-8:00	Registration	
8:00-8:35	S-Layer Directed Nanoscale Fluid Mechanics	Dietmar Pum Zentrum Fuer Nanobiotechnologie
8:35-9:10	Spider Silk: From Protein-rich Gland Fluids to Diverse Biopolymer Fibers	Gregory Holland San Diego State University
9:10-9:45	Self-Assembled Biomimetic Conductive Fibers as a Novel Functional Materials Platform	Allon Hochbaum University of California, Irvine
9:45-10:15	BREAK	
10:15-10:50	Biocompatible and Biomimetic Self-Assembly of Functional Nanostructures	Jeffrey Brinker University of New Mexico
10:50-11:25	Thermostable Protein Parts and Components for Bionanomechanical Devices	Douglas Clark University of California, Berkeley
11:25-12:00	Interfacing Optically-active Nanostructures with Biopolymers	Srikanth Singamaneni Washington University
12:00-1:30	LUNCH	
1:30-2:05	Biophotonic Coloration and 3-D Texture in the Flexible Skin of Cephalopods	Roger Hanlon Marine Biological Laboratory
2:05-2:40	Adaptive Nanostructures Through Dynamic Molecular Systems	Rein Ulijn ASRC
2:40-3:15	Combined experimental and computational studies of biotic-abiotic interactions	Carole Perry Nottingham Trent University /CUNY
3:15-3:45	BREAK	
3:45-4:20	Biomolecular Programming of Discrete Nanomaterials	Nathan Gianneschi University of California, San Diego
4:20-5:10	Hybrid Plasmonic-MOF Nanoparticle Superlattices	Teri Odom Northwestern University
	ADJOURNED FOR THE DAY	

Natural Materials and Systems Program Review 2015

Dr. Hugh DeLong | December 7-11, 2015| Destin, FL

Emerald Grande at HarborWalk Village
10 Harbor Blvd.
Destin, FL 32541

Day 4 | Thursday, December 10, 2015

Time	Title of Project	Speaker
7:00-8:00	Registration	
8:00-8:35	Development of an IR biosensing platform using microresonators	Brett Wenner AFRL
8:35-9:10	Structure-Function Relationship of Biomaterials and Fabrication of 3D Bio-structures	Patrick Dennis AFRL
9:10-9:45	Optical, Biochemical, and Molecular Characterization of New Light Producing Systems from Marine Invertebrates	Dimitri Deheyn University of California, San Diego
9:45-10:15	BREAK	
10:15-10:50	Bio-inspired Assembly at Two Length Scales: Peptide and Particles	Raymond Tu RFCUNY – City College
10:50-11:25	Natural Helical Filaments for High Performance and Responsive Materials	Jeffrey Urbach Georgetown University
11:25-12:55	LUNCH	
12:55-1:45	Autonomously Evolving Biocatalysts and Functional Materials	Nathan Gianneschi University of California, San Diego
1:45-2:20	Optimal Learning for Peptide Design	Peter Frazier Cornell University
2:20-3:10	Bio-nanocombinatorics to Achieve Functional Hybrid Nanomaterials	Paras Prasad SUNY, Buffalo
3:10-3:40	BREAK	
3:40-4:15	Silk: Reconstitution and Novel 3D Composite	Fritz Vollrath University of Oxford
4:15-5:05	Convergent Evolution to Engineering: Multiscale Structures and Mechanics in Damage Tolerant Functional Biocomposite and Biomimetic Materials	David Kisailus University of California, Riverside
5:05-5:40	Biomimetic Lipid Nanoparticles for Sensing, Sequestration, and Elimination of Toxic Molecules from Biosystems	Shad Thaxton Northwestern University
	ADJOURNED FOR THE DAY	

Natural Materials and Systems Program Review 2015

Dr. Hugh DeLong | December 7-11, 2015| Destin, FL

Emerald Grande at HarborWalk Village
10 Harbor Blvd.
Destin, FL 32541

Day 5 | Friday, December 11, 2015

Time	Title of Project	Speaker
7:00-8:00	Registration	
8:00-8:35	Engineering robust enzyme activity through fundamental studies of extremophile enzymes	Robert Kelly North Carolina State University
8:35-9:25	Disposable, Autonomic, Energy-Converting Ion Channel Sensor Materials	Michael Mayer/David Sept University of Michigan
9:25-9:55	BREAK	
9:55-10:30	Carbohydrate Materials Discover: Towards a Post-Cellulosic Future	Adam Braunschweig University of Miami
10:30-11:05	Computational Design of Peptides to Detect Human Performance Biomarkers	Carol Hall North Carolina State University, Raleigh
11:05-11:40	Understanding natural response mechanisms of radiation-activated RNA switches for novel sensing technologies	Lydia Contreras University of Texas, Austin
11:40-1:10	LUNCH	
1:10-1:45	Engineering robust enzyme activity through fundamental studies of extremophile enzymes	Mark Blenner Clemson University
1:45-2:20	Characterization and Biomimicry of Multifunctional Avian Optical Nanostructures	Matthew Shawkey University of Akron
2:20-2:55	Studies of the self-assembly of rouse sarcoma virus capsid protein by TEM, ssNMR and coarse-grain simulations	Bo Chen University of Central Florida
	MEETING ADJOURNED	