2017 Summer Undergraduate Research Forum  
July 28, 2017

Schedule of Events

Location: LSU Union Ballroom

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<td>9:00 am – 1:00 pm</td>
<td>Poster Setup</td>
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<td>1:00 pm – 1:05 pm</td>
<td>Speaker Introduction</td>
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<tr>
<td>1:05 pm – 1:20 pm</td>
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<td>1:20 pm – 4:30 pm</td>
<td>Poster Session</td>
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</table>
Dr. Valsaraj is the Vice President for Research & Economic Development at LSU. He holds the titles of Charles and Hilda Roddey Distinguished Professor in Chemical Engineering and Ike East Professorship in Chemical Engineering. He is a Fellow of both the American Association for the Advancement of Science (AAAS) and the American Institute of Chemical Engineers (AIChE). In 2010, he was awarded the LSU Rainmaker Award in the Senior STEM category and in 2011 he was awarded the Distinguished Research Master award by LSU. The professional societies of AIChE and ACS (American Chemical Society) awarded him the Charles E Coates award in 2012.

He received the M.Sc. in Chemistry from the Indian Institute of Technology, Madras in 1980 and a Ph.D. in Chemistry (with Chemical Engineering as Minor) from Vanderbilt University in 1983. After a brief stint at the Arkansas Engineering Experiment Station of the University of Arkansas, Fayetteville, he joined LSU in 1986 as a research associate. He later became a regular faculty in the Cain Department of Chemical Engineering and progressed through the ranks to a tenured full professor. He served as the Department Chair from 2005 to 2011. He has also provided service as a member of the Faculty Senate, Chair of the College of Engineering Policy Committee, and several other committees during his 27 years of service to LSU.

His research area is in environmental chemical engineering. He has broad research experience in wastewater treatment, atmospheric chemistry and, modeling the fate and transport of contaminants in all three-environmental media (air, water and soil/sediment). He has mentored 12 Ph.D. (2 more in progress), 19 MS (2 more in progress) students at LSU and several postdoctoral students in addition to hosting a number of visiting professors in his laboratory.

Area of Interest

His present research is concerned with the transformations of pollutants on atmospheric aerosols (fog, rain, ice and snow), mercury sequestration in sediments and, studies on chemical dispersant design for sub-sea oil/gas spill. He is the author of 1 textbook (with three editions), 175 peer-reviewed journal articles, 27 book chapters and 2 U.S. patents. He has made over 200 national and international presentations and 27 invited seminars and plenary lectures on his research. His research has been supported by the NSF, EPA, DOE, DOD, USGS and several private industries. He was very active in one of the longest lasting (1982-2002) Centers of Excellence at LSU in the college of engineering, viz., the U.S. EPA Hazardous Substances Research Center which brought in about $30 million in research funds during its lifetime. He is presently co-directing another $10.34 million Consortium on Molecular Engineering of Dispersants (CMEDS) funded by the Gulf of Mexico Research Initiative. He has consulted for various private industries and also provided service to several review panels, state and federal agencies.
The 24th Annual Summer Undergraduate Research Forum (SURF) is pleased to showcase the numerous undergraduate students who have engaged in summer research projects this year at institutions throughout the LSU System.

SURF participants represent programs including:

- Center for Computation & Technology Research Experiences for Undergraduates (CCT REU)
- Chemical Engineering (CHE REU)
- Consortium of Innovation in Manufacturing and Materials (CIMM REU)
- Initiative for Maximizing Student Development (IMSD)
- Louisiana Biomedical Research Network (LBRN)
- Physics & Astronomy Research Experiences for Undergraduate (P&A REU)
- Smart Polymer Composite Materials and Structures REU (SMART REU)

Individual student researchers in various laboratories across LSU

SURF is sponsored in part by some of the programs listed above.
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Student researchers are listed alphabetically and number assignment indicates poster location.


4 Indira Avendano (University of Central Florida, CCT) Jesse Allison, Daniel Shanahan, LSU Music and Dramatic Arts / Center for Computational and Technology, “Crowdsourcing the Audio Transcription of Songs: Designing a User Interface to Facilitate Large Scale Audio Data Correction.”


6 Ryan Biggins (Lehigh University, CHE) Dr. Kerry Dooley, Changyi Jiang, Jaren Lee, LSU Chemical Engineering, “Transition Metal-Doped Rare-earth Oxsulfide Catalysts for High Temperature Dry Reforming of Methane.”


8 Maria Chernova (City College of New York, CHE) Christopher Arges, LSU Chemical Engineering, “Ammonia-Based Flow Battery for Industrial Waste Heat Recovery.”

9 Daniel E. Christiansen (Tulane, SMART) Baylen Thompson, John A. Pojman, LSU Chemistry, “Radical-induced cationic frontal polymerization of divinyl ethers with epoxy comonomer.”

10 Baylee Danz (Brigham Young University Idaho, P&A) Thomas Corbitt, Simün Lorenzo, Jonathan Cripe, LSU Physics & Astronomy, “Measuring a Novel Optical Spring Effect for Gravitational Wave Detectors.”

11 Sachi Dhakal (ULM, LBRN) Yong-Hwan lee, Derek Rodney Bratcher, LSU Biological Sciences, “Expression, Purification, and Crystallization of Chimeric Pseudoglycosyltransferase.”


13 Isaiah Dorsey (Mississippi State University, CHE) Maria T. Gutierrez-Wing, LSU Chemical Engineering, “Investigating Exposure Time, Freezing Rate, and Cell Concentration Parameters for Cryopreservation for Nannochloropsis sp. Using Dimethyl Sulfoxide.”

14 Benjamin Drewry (University of Arkansas, CHE) Saurin Raval, Ye Xu, LSU Chemical Engineering, “Computational modeling of doped discharge products in Lithium-Air batteries.”


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17 Julia Falcone (Case Western Reserve University, P&A) Thomas Corbitt, Jonathan Cripe, LSU Physics and Astronomy, “Improving Thermal Noise Measurements in Crystalline AlGaAs Mirrors.”

18 Mary Fleck (Bowling Green State University, CCT) Holden T. Smith, Kenneth Lopata, LSU Chemistry / Center for Computation and Technology, “Modeling Optical Properties of Plasmonic Nanoparticles using Finite Difference Time Domain.”

19 Christopher Forester (LA TECH, LBRN) Karen P. Maruska, Karen E. Field, LSU Biological Sciences, “The Impact of Maternal Mouth-Brooding on Neural Activation Patterns in the African Cichlid Fish A. burtoni.”


21 April M Garrity (Francis Marion University, P&A) J. Blackmon, C. Deibel, E. Good, A. Hood, K. Joerres, R. Cottingham, LSU Physics, “Testing Focal Plane Detectors for the SEparator for CApture Reactions (SECAR).”

22 Rosa Garza (California State University Monterey Bay, CCT) Edgar Berdahl, Andrew Pfalz, LSU Experimental Music and Digital Media, “Machine Learning for the Inverse Control of FM Synthesis.”

23 Katherine Gerosa (LSU, Rupnik Research Group) K. Rupnik, LSU Chemistry, “Novel Nanoparticle-Enzyme Based Hybrids for Selective ESH Transfers in Enzymes: Sharpening the UF Tools.”

24 Jesse Goncalves (Seattle University, CCT) Hartmut Kaiser, LSU Center for Computational Technology, “Leveraging HPX on a Cluster of Raspberry Pi’s.”

25 Joseph E. Hadel (University of Kansas, SMART) Tatiana Mello, Dr. Grover L. Waldrop, Marcio de Queiroz, LSU Biological Sciences / Mechanical Engineering, “Metabolic Optimization of Malonyl-CoA Production in E. Coli: Implications for Bioprocess Engineering.”

26 Ahmad B Hamed (LSU, CIMM) Henry Bellamy, Philip Sprunger, Shengmin Guo, Wen Jin Meng, LSU Physics, “In Situ XRD Studies of Metal Alloy Powders.”

27 Justin Hayes (University of Rhode Island, CHE) Dr. Kevin McPeak, Daniel Willis, LSU Chemical Engineering, “Plasmonic Purification of Water for Developing Countries.”


29 Ivan Hidrovo (LSU, P&A) David E. Sanchez, Joyoni Dey, LSU Physics and Astronomy, “Three-Dimensional Caregistration of Preclinical Data Across Different Time Points for Tumor Analysis.”

30 Christina Hoffman (University of Maryland, Baltimore County, CIMM) Dr. Fareed Dawan, Dr. Patrick Mensah, Dr. Guoqiang Li, SUBR Mechanical Engineering, “Additive Manufacturing of Mini Wind Turbine Smart Blades for Low-Power Applications.”


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33 James Hong (University of Alabama, P&A) Ilya Vekhter, Daniel Sheehy, LSU Physics & Astronomy, “Heat Capacities of Unconventional Superconductors.”

34 Adam Humble (University of West Florida, CIMM) Hong Yao, LSU Mechanical Engineering, “Contour and Plane Power Effect on Laser 3D Printed Objects.”

35 Fatima Iqbal (Centenary, LBRN) Stephen J. Cieply, Jonette M. Green, A. Wayne Orr, LSUHSC-S Pathology and Translational Pathobiology, “Integrins in Endothelial Priming.”

36 Lauren A. Jackson (LSU, IMSD) Samia O'Bryan, J. Michael Mathis, LSU Veterinary Medicine, Comparative Biomedical Sciences, “CXCR4 Targeting of an Oncolytic Adenovirus for Breast Cancer Therapy.”


38 Binisha Karki (SLU, LBRN) Natalie Fowlkes, Rachel Eddy, Rafiq Nabi, Jared Barrilleaux, Konstantin G. Kousoulas, LSU Veterinary Medicine, Pathobiological Sciences (BIOMMED), “Evaluation of Clinically Relevant Health Parameters and Characterization of Immune Responses During Tumor Progression in a Novel Immunocompetent Double-Labeled Murine Melanoma Model.”


41 Joselyn Knowling (LSU, IMSD) Shanshan Cai, Liliang Jin, Sanjay Batra, Samithamby Jeyaseelan, LSU Veterinary Medicine, Pathobiological Sciences, “NLRP6 Inflammasome Controls Pulmonary Antibacterial Immunity.”

5 Andrew Kristof (North Carolina State University, CHE) Joseph Balhoff, Jacob Pettigrew, Rachael Coates, Sharif Rahman, Adam Melvin, LSU Chemical Engineering, “The effects of fluid shear stress on cancer cell deformation and migration.”

42 John Le (LSU, IMSD) John T Le, Sagar Paudel, Laxman Ghimire, Liliang Jin and Samithamby Jeyaseelan, LSU Veterinary Medicine, Pathobiological Sciences (BIOMMED), “NLRC4 Inflammasome is Regulator of Macrophage Function in Polymicrobial Sepsis.”

43 Hugo Leiva (LSU, CIMM) Ebrahim Khosravi, SUBR Computer Science, “Humanoid Facial Expression Analysis and Design.”

44 Samara Levy (University of Rochester, P&A) Elisha Siddiqui, Xiaoping Ma, Jonathan P. Dowling, Hwang Lee, LSU Physics, “Visualizing Evolution of Optical States with the Wigner Function.”

45 Frank Ho Luo (Vanderbilt University, CIMM) Shuai Shao, LSU Mechanical and Industrial Engineering, “Exploring the Properties of Persistent Slip Bands through Atomistic Modeling.”

46 Corey Matyas (LSU, CCT) Georgios Veronis, LSU School of Electrical Engineering and Computer Science / Center for Computation and Technology, “Parallel hybrid optimization algorithm for the material composition of multilayer thin-film structures.”

47 Brenna May (ULL, LBRN) May BE, Sabol RA, Bowles AC, CÔtĂ A, Dutreil MF, Matossian M, Burkes HC, Collins-Burow B, Burow ME, Bunnell BA, Tulane Center for Stem Cell Research and Regenerative Medicine, “Adipose Stem Cells from Obese Individuals Promote Metastasis of Breast Cancer Patient Derived Xenograft (PDX).”
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48  Kasey McCoy (Alabama A&M University, SMART) Ang Li, Guoquiang Li, LSU Mechanical Engineering, “Methodology Development of Fabricating Epoxy-Based Nanocomposites .”

49  Victoria Lee McGee (Northwestern, LBRN) Stephan Witt, Dhaval Patel, Suresh Nagarajan, LSHSC-S Biochemistry and Molecular Biology, “Screening for genes that suppress the toxicity of adenovirus 2 protein VI, a protein that disrupts the endosomal network in yeast.”

50  Madison H. Mcilvoy (Texas A&M University, CIMP) Luis Haber, LSU Chemistry, “The Synthesis and Characterization of Metal Nanoparticles for Applications in 3D Printing.”

51  Anthony E. Mirasola (Rice University, P&CE) Kevin Valson Jacob, Sushovit Adhikari, Jonathan P. Dowling, LSU Physics & Astronomy, “Tomography of Quantum Optical Networks with Quadratic Interactions.”

52  Heather Mixon (University of West Florida, CIMP) Ang Li, Guoquiang Li, LSU Mechanical Engineering, “Development of 3D printable complex lattice structures and UV-curing materials.”

53  Andrew Mizener (Macalester College, P&A) Manos Chatzopoulos, Amber Lauer, Geoff Clayton, LSU Physics and Astronomy, “Simulating the Nucleosynthesis in R Corona borealis Stars Across a Multitude of Nuclear Reaction Networks.”

54  Angelique Morvant (Texas A&M University, CCT) Shawn Walker, Ethan Seal, LSU Mathematics / Center for Computation & Technology, “Simulating Liquid Crystal Droplets.”


57  Anna Neshyba (Willamette University, CCT) David Koppelman, Steven Brandt, LSU Electrical & Computer Engineering, “One-glance, Zero-effort Representation of Program Efficiency within the Cactus Computational Framework.”


59  Kelly Nieto (Texas A&M University, SMART) Gerald J. Schneider, Ketrick Walker, LSU Chemistry, “Dynamics of Polydimethylsiloxane.”

60  Katherine M Nugent (LSU, Research in Boyajian Lab) Tabetha Boyajian, Tyler G. Ellis, LSU Physics and Astronomy, “Characterizing the Photometric Stability of Stars Around KIC 8462852.”

61  Daniela Ojeda (University of Central Florida, CIMP) Brian Novak, Dorel Moldovan, LSU Mechanial and Industrial Enigneering, “Molecular Dynamic Simulation Studies of Thermophysical Properties in Liquid Ni-Al Alloys.”

62  JosÃ­M Ortiz Tavçrez (University of Puerto Rico, P&A) Daniel Sheehy, LSU Physics and Astronomy, “Approach to Thermalization on a Four Site Fermionic Hubbard Model.”

63  Stefanie Parisi (Syracuse University, CHE) James Dorman, Natalia da Silva Moura, Tochukwu Ofoegbuna, LSU Chemical Engineering, “Novel Synthesis of SrNbO3 Nanowires for Photocatalytic Water Purification.”

64  Amber Pete (McNeese, CHE) Mike Benton, LSU Chemical Engineering, “Photosynthetic Organisms as Micro-Bioreactors.”
Autistic Behavioral Phenotypes in the Kcna1 Knockout Mouse Model - targeted NanoGUMBOS for Chemotherapeutic Application

Photodisinfection of TNF receptors by Nitric Oxide activity in cancer cells with a protease-resistant peptide based reporter.

Droplets via Ericksen and Allen Engineering Dimensional Coregistration of Preclinical Data Across Different Time Points for Tumor Analysis

applications characterization of epoxy Engineering, californicus Expos retrotransposon upon nucleolar stress in Nopp140 depleted larvae of Drosophila melanogaster.

Colloids in Drying Droplets: From Surface Patterns to Actuating Materials

Phenotype in the Kcna1 Knockout Mouse Model of Epilepsy

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Self Screening Human 15
Calibration Lines in LIGO Data

wisely?

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82  Jonathan S. Van Buskirk (Texas A&M University, SMART) Isiah Warner, Rocio Perez, Pratap Chhotaray, Jordan Blunt, Carson Mack, LSU Chemistry, “Improvements in smart polymers through metathesis and composite blending.”

83  Ketrick Walker (Alabama A&M University, SMART) Gerald J. Schneider, LSU Chemistry, “Understanding the effects of silica reinforced nanocomposites within polymer melt.”

84  Braden M. Weight (North Dakota State University, CCT) Juana Moreno, LSU Physics / Center for Computation and Technology, “Deformation of Single Crystal NiAl and Ni₃Al.”


86  Rachel Williams (Black Hills State University, P&A) Scott Marley, Sudarsan Balakrishnan, LSU Physics & Astronomy, “Scintillator Detector Characterization for β-delayed Neutron Emission.”

87  Corbin Witt (Francis Marion University, CHE) Krishnaswamy Nandakumar, Jielin Yu, LSU Chemical Engineering, “A DEM Study of Particle Clustering in a Cylindrical Vessel Undergoing Orbital Motion.”

88  Kade Young (Truman State University, CCT) Peter Diener, Frank Lüffler, LSU Physics / Center for Computation and Technology, “Complex and Attractive: Writing and Plotting Scalar Field Data Evolving in a Black Hole Spacetime .”
LBRN projects were supported by the National Institute of General Medical Sciences of the National Institutes of Health under Award Number P20GM103424 and by the Louisiana Board of Regents Support Fund. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or Louisiana Board of Regents.

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