

## Second Workshop of the Materials Science and Engineering Research Institute (MSERI)

American University of Sharjah  
February 19–20, 2019

### SPEAKERS

#### Dr. Michael Bauer



Full Professor  
Department of Physics  
University of Kiel

Dr. Michael Bauer obtained his PhD from the Chemistry Department of the Federal Institute of Technology in Zurich, Switzerland (ETH Zurich) on studies of ultrafast model-type adsorbate-surface charge transfer processes. He studied physics at the Technical University of Munich, where he received his Diploma in 1993. He became full professor in the Physics Department in Kiel University in 2012. In his current research, Professor Bauer focuses on ultrafast processes in solids with particular emphasis on two-dimensional and correlated materials as well as on plasmonic processes at surfaces. He is particularly known in the community for his contributions to the development of novel photoemission-based time-resolved experimental techniques such as time-resolved ARPES using high harmonic generation pulses and time-resolved PEEM. Before he joined Kiel University, he stayed for six years at the University of Kaiserslautern, where he was particularly involved in the study and the coherent control of plasmonic excitations in nanoparticles. He did his PostDoc in the group of Margaret Murnane and Henry Kapteyn at the Center of Ultrafast Optical Science (CUOS), University of Michigan, Ann Arbor, and at JILA, University of Colorado, Boulder, where for the first time he demonstrated femtosecond time-resolved ARPES using high harmonic generation sources.

In 2005, Dr. Bauer received the Gaede-price of the German Vacuum Society for his pioneering work in the field of time-resolved photoemission spectroscopy using ultrafast laser pulses. In 2011, he got offers for full professor positions at the University of Halle and the University of Göttingen. Professor Bauer is a past recipient of a fellowship by the Swiss National Fund, as well as the research fellowship of JILA, Boulder, Colorado, where he was a visiting professor in 2010.

Dr. Bauer is author of more than 100 publications including numerous papers in *Nature*, *Nature Materials*, *Nature Communications*, and *Physical Review Letters*.



### **Dr. Yang-Tse Cheng**

Frank J. Derbyshire Professor of Materials Science  
Department of Chemical and Materials Engineering  
University of Kentucky

Dr. Y.T. Cheng is the Frank J. Derbyshire Professor of Materials Science and Professor in the Department of Chemical and Materials Engineering at the University of Kentucky, where he has worked since 2008. Previously, he was a Technical Fellow and Laboratory Group Manager for Engineered Surfaces and Functional Materials at the General Motors Research and Development Center. His research activities cover topics such as small scale mechanical property measurements; growth, structure, and properties of nanostructured materials; microscopic shape memory and superelastic effects; magnetorheological fluids; superhydrophobic surfaces; ion beam modification of materials; automotive applications of new materials and processes, including electrical contacts, high power-density engines and transmissions, environmentally friendly machining processes, hydrogen sensors, fuel cells, metal hydride batteries, and lithium ion batteries.

He graduated from the California Institute of Technology with a BS degree in physics/mathematics, and MS and PhD degrees in applied physics. He has published more than 180 papers and holds 48 US patents. He is a Fellow of the American Physical Society, Materials Research Society, and National Academy of Inventors. His biographical information can be found at <https://web.engr.uky.edu/~ycheng/>.



### **Dr. Mohamed Eddaoudi**

Distinguished Professor of Chemical Science  
Director of the Advanced Membranes and Porous Materials Center  
King Abdullah University of Science and Technology (KAUST)

Dr. Mohamed Eddaoudi received his master's and doctorate in chemistry from Denis Diderot University (Paris VII) in Paris, France. Dr. Eddaoudi is a member of the American Chemical Society. He received the Outstanding Faculty Research Achievement Award (2004 and 2007) and the Chemistry Outstanding Teaching Award (2005 and 2008) from the University of South Florida. He was awarded the prestigious National Science Foundation Career Award in 2006. Dr. Eddaoudi has given more than 150 invited talks at conferences and universities since 2002. In 2014, 2015, 2016, 2017 and 2018, he was name among the Thomson Reuters Highly Cited Researchers, and, in 2014, among the world's most influenced scientific minds.

His contribution to the field of metal-organic frameworks (MOFs) has been highly visible in peer-reviewed journals, as evidenced through his recognition by ISI in 2007 as one of the top 100 most cited chemists of the past 10 years (ranked #68), <http://in-cites.com/nobel/2007-che-top100.html>.

His research interests include developing new strategies for the rational design and construction of functional solid state materials; design and synthesis of functional porous solids for energy and environmental sustainability, including coordination polymers, metal-organic frameworks (MOFs), porous organic polymers (POPs) for hydrogen storage, methane storage, CO<sub>2</sub> capture & storage; and metal-organic materials based sorbents and membranes addressing the energy-intensive gas or vapor separations.



**Dr. Fritz Prinz**

Finmeccanica Professor  
Mechanical Engineering  
Materials Science and Engineering  
Stanford University

Dr. Fritz Prinz is the Finmeccanica Professor in the School of Engineering at Stanford University, Professor of Materials Science and Engineering, Professor of Mechanical Engineering and Senior Fellow at the Precourt Institute for Energy. He also serves as the Director of the Nanoscale Prototyping Laboratory and Faculty Co-director of the NPL Affiliate Program. A solid-state physicist by training, Dr. Prinz leads a group of doctoral students, postdoctoral scholars, and visiting scholars who are addressing fundamental issues on energy conversion and storage at the nanoscale. In his laboratory, a wide range of nano-fabrication technologies are employed to build prototype fuel cells, capacitors and batteries that are used to test new concepts and novel material structures through atomic layer deposition, scanning tunneling microscopy, impedance spectroscopy and other technologies. In addition, his group uses atomic scale modeling to gain insights into the nature of charge separation and recombination processes.

Before coming to Stanford in 1994, he was on the faculty at Carnegie Mellon University. Dr. Prinz earned a PhD in Physics at the University of Vienna.



**Dr. Emmanuel Stratakis**

Research Director  
Institute of Electronics Structure and Laser (IESL) of the  
Foundation for Research and Technology- Hellas (FORTH)

Dr. Emmanuel Stratakis received his PhD in Physics from the University of Crete in 2001 from the University of Crete. After graduating, he joined as a visiting researcher the IESL-FORTH, working on the ultrafast laser engineering of materials and as an adjunct professor at the Department of Materials Science and Technology, University of Crete. In the fall semesters of 2006 and 2008, he was appointed as a visiting researcher at the Department of Mechanical Engineering of the University of California, Berkeley. In 2007 he was elected Researcher at IESL-FORTH where he is leading the Ultrafast Laser Micro- and Nano-processing Laboratory (<http://stratakislab.iesl.forth.gr>), comprising a team of 35 postdocs, PhD students, technicians and administrative personnel.

His research interests are in the fields of ultrafast laser interactions with materials for (a) biomimetic micro- and nano- structuring (b) Advanced photonic processes for photovoltaics and energy storage, c) nanomaterials synthesis and diagnostics for optoelectronics and (c) biomaterials processing for tissue engineering. He has delivered more than 40 invited and keynote lectures and has been organizer and chair in major international scientific conferences. He has over 170 SCI publications and more than 6000 citations and he has coordinated many National and EU grants. Since 2015, he has been the Director of the European Nanoscience Facility of FORTH, part of the NFFA-Europe EU Infrastructure, where he is a member of the General Assembly. He is a National Representative to the High-Level Group of EU on Nanosciences, Nanotechnology and Advanced Materials and a National Expert for the Horizon 2020 committee configurations on: Nanotechnologies, Advanced materials, Biotechnology, Advanced Manufacturing and Processing. He is a member of the Scientific Committee of COST, of the Physical Sciences Sectoral Scientific Council of the National Council for Research & Innovation of Greece and National Delegate of the OECD Working Party on Bio-, Nano- and Converging Tech (BNCT).



**Dr. Thirumalai Venky Venkatesan**

Director, Nano Institute  
Professor, Departments of ECE, Physics, MSE and NGS  
National University of Singapore

Professor T. Venkatesan is currently the Director of the Nano Institute at the National University of Singapore (NUSNNI) where he is a Professor of ECE, Physics, MSE and NGS. He wore various hats at Bell Labs and Bellcore before becoming a Professor at University of Maryland. As the inventor of the pulsed laser deposition (PLD) process, he has over 760 papers and 30 patents and is globally among the top 100 physicists (ranked at 66 in 2000) in terms of his citations (over 43,800 with a Hirsch Index of 106 - Google Scholar). He has graduated over 45 PhDs, 35 Post Docs and over 35 undergraduates.

He is also the founder and Chairman of Neocera, a company specializing in the area of PLD and magnetic field imaging systems. Close to 10 of the researchers (PhD students and Post Docs) under him have become entrepreneurs starting over 17 different commercial enterprises. He is a Fellow of the APS, winner of the Bellcore Award of Excellence, Guest Professor at Tsinghua University (China), Winner of the George E. Pake Prize awarded by American Physical Society (2012), President's Gold Medal of the Institute of Physics Singapore, Academician of the Asia Pacific Academy of Materials, Fellow of the World Innovation Forum, was a member of the Physics Policy Committee (Washington, DC), the Board of Visitors at UMD and the Chairman, Forum of Industry and Applications of Physics at APS. He was awarded the outstanding alumnus award from two Indian Institute of Technologies- Kanpur (2015) and Kharagpur (2016), India.