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SUN

OCTOBER 30-31, 2023 | SAN FRANCISCO, CA

International Conference on

NextGen Solar (SUN-2023)

October 30, 2023 | San Francisco, CA

October 31, 2023 | Virtual (Pacific Time)

Venue: DoubleTree by Hilton, San Francisco Airport



Supporting Sponsor



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Meeting ID: 863 2570 7665

Passcode: 319752

08:30-08:55 Registrations & Badge Pickup

@ Fireplace side

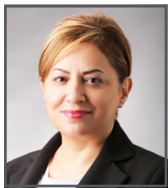
08:55-09:00 Opening Ceremony

Plenary Presentation

Moderator: Shalini Menezes, InterPhases Solar, Moorpark, CA

09:00-09:45 **A Novel Hybrid Solar-Hydrogen Power Generation System for Distributed and Peaker Plant Applications**

Nesrin Ozalp, Illinois State University, Normal, IL

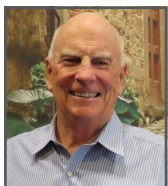


Nesrin Ozalp is the Founding Department Chair of Mechanical Engineering at Illinois State University. She is also a Full Professor by Courtesy at the School of Mechanical Engineering of Purdue University West Lafayette, and an Associate Editor of ASME Journal of Solar Energy Engineering. She received her Ph.D. from the University of Washington's Mechanical Engineering Department and her MSc in Mechanical Engineering from Stanford University. She specializes in the areas of experimental and numerical study of thermal transport processes with particular focus on multiphase convective and radiative heat transfer analysis of solar thermochemical processes with non-linear temperature patterns and turbulent flow dynamics. She is the Lead Principal Investigator of research projects totaling \$5M+. She is the corresponding author of 130+ peer reviewed publications, She is an ASME Fellow and an ASTFE Fellow.

Keynote Presentations

09:45-10:15 **The Future of Solar Energy on Indian Lands: The Navajo Example**

Martin J. Pasqualetti, Arizona State University, Tempe, AZ



Martin J. Pasqualetti is a professor in the School of Geographical Sciences and Urban Planning at Arizona State University and former Co-Director of the Energy Policy Information Council (EPIC). He is an elected fellow of the American Association of Geographers; a recipient of the Alexander and Ilse Melamid Medal (American Geographical Society), and the 2018 Distinguished Alumnus of the Year at the University of California (Riverside). He has served two Arizona governors as chair of the Arizona Solar Energy Advisory Council, and he was a founding member of the Arizona Solar Center. He co-founded and was twice elected president of the Energy and Environment Specialty Group of the American Association of Geographers. Martin Pasqualetti has published books on wind power, renewable energy landscapes, the geography of energy, nuclear power plant decommissioning, and landscape evolution, as well as more than 100 articles and book chapters on energy and environment topics.

10:15-10:45 **Solar Energy for the Just Energy Transition**
Daniel M. Kammen, University of California, Berkeley, CA



Daniel M. Kammen is the James and Katherine Lau Distinguished Professor of Sustainability. He is a Professor of Energy at the University of California, Berkeley with appointments in the Energy and Resources Group, the Goldman School of Public Policy (where he Directs the Center for Environmental Policy), and as a professor in the Department of Nuclear Engineering. He served as Science Envoy in the Obama Administration, and as Senior Advisor for Energy and Innovation in the Biden Administration. Kammen was elected to the American Academy of Arts & Sciences in 2020. Since 1999 Kammen has been a Coordinating Lead Author for the Intergovernmental Panel on Climate Change (IPCC), which shared the 2007 Nobel Peace Prize.

10:45-11:00 Break

@ Sierra Foyer

Oral Presentations

Scientific Session-I

- 11:00-11:20 **Designing Hybrid Plasmonic Nanocatalysts for Solar-Fuel-Based Systems**
Reza Nazemi, Colorado State University, Fort Collins, CO
- 11:20-11:40 **Flexible Energy Conversion Devices via Roll-to-roll Electrodeposited Nanocrystalline pn Homojunctions**
Shalini Menezes, InterPhases Solar, Moorpark, CA
- 11:40-12:00 **Self-assembled Fullerene Isomers in Zinc Oxide as Electron Transport Layer to Enhance Interfacial Properties in Organic Solar Cells**
Shashi B. Srivastava, Henry Ford Health, Detroit, MI
- 12:00-12:20 **Experimental Evaluation of the Performance of a Confined Bed of Granular Material as Thermal Energy Storage System**
Antonio Soria Verdugo, University Carlos III of Madrid, Spain
- 12:20-12:40 **Flow Batteries for Long Duration Energy Storage and Grid Decarbonization**
Massimo Guarnieri, University of Padua, Italy

12:40-13:40 Lunch Hour

@ Sierra A

Chairs: **Reza Nazemi**, Colorado State University, Fort Collins, CO
Jonathan Swanepoel, University of Pretoria, South Africa

- 13:40-14:00 **Initial Testing of a Hybrid Solar-dish Brayton Cycle (ST-CHP)**
Jonathan Swanepoel, University of Pretoria, South Africa
- 14:00-14:20 **Performance and Economic Analysis of Steam Supply Convergence System with Solar Thermal System and Heat Pump for Industrial Process**
Ga-Ram Lee, Korea Institute of Machinery & Materials, South Korea
- 14:20-14:40 **New Trends and Barriers in the Development of the Photovoltaic Sector in Central Europe**
Jiri Bim, Czech Technical University in Prague, Czech Republic
- 14:40-15:00 **Transition Metal Dichalcogenides for Next-generation Photovoltaics**
Koosha Nassiri Nazif, Stanford University, Stanford, CA

- 15:00-15:20 **Application of Thermal Storage Systems for Indirect Solar Cookers**
Halefom Kidane Abrha, Hungarian University of Agriculture and Life Sciences, Hungary
- 15:20-15:40 **Experimental Investigation of a Helically Coiled Solar Cavity Receiver for Simultaneous Generation of Superheated Steam and Air**
Yasuki Kadahiro, German Aerospace Center, Germany
- 15:40-16:00 **Role of Energy Bank in Creating a 100% Green Power Grid**
Eddie Dehdashti, Power Applications & Research Systems, Inc. San Francisco, CA
- 16:00-16:20 **Increasing Transmission Capacity with Grid Enhancing Technologies**
Julia Selker, WATT Coalition Washington, D.C.
- 16:20-16:40 **Revealing Hidden Variables to Support Perovskites from Lab to Fab**
David P. Fenning, University of California San Diego, La Jolla, CA
- 16:40-17:00 **Development of Solar Power with New Business Models on the Path to Energy Transition in Turkey**
Sirri Uyanik, Iskenderun Energy, Turkey
- 17:00-17:20 **Pairing Solar with Pumped Energy Storage in Deep Hydraulic Fractures**
Lev Ring, Sage Geosystems Inc., Houston, TX
- 17:20-17:40 **Boronated Organometallic Complexes for Non-Aqueous Flow Batteries**
Emmanuelle Despagne-Ayoub, Occidental College, Los Angeles, CA

17:40-18:30 **Poster Presentations & Drinks** @ Sierra A

- P-01 **Overall Efficiency of PV + TEG**
Paul Henshaw, University of Windsor, Windsor, Canada
- P-02 **Dynamic Modeling of a Residential Integrated Pemfc-Based Micro-Chp System**
Hasna Louahlia, University of Caen Normandy, France
- P-03 **Photovoltaic Power Production Forecasting using Artificial Intelligence**
Gualous Hamid, University of Caen Normandy, France
- P-04 **Impact of the Solar Energy Transition on CO2 Mitigation**
Zachary Chang, University of California, Berkeley, CA
- P-05 **Multiple Benefits of Agrivoltaic Systems, Barrier for the Easiest Implementation**
Jiri Bim, Czech Technical University in Prague, Czech Republic
- P-06 **Misconceptions Students Hold about Solar Energy**
Timothy F Slater, University of Wyoming, Laramie, WY

18:30-20:00 **Dinner** @ Sierra A

End of Day-1

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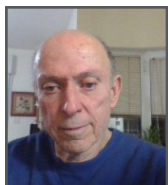
06:20-06:30 Opening Remarks & Introduction

Keynote Presentations

Moderator: Amimul Ahsan, Islamic University of Technology, Bangladesh & Swinburne University of Technology, Melbourne, Australia

06:30-07:00 **Application of Thin Film Organic Photovoltaics in Greenhouses**

Meir Teitel, Agricultural Research Organisation, Israel



Meir Teitel is a Senior Scientist who recently retired from the Department of Sensing, Information, and Mechanization Engineering in the Institute of Agricultural Engineering (Volcani Center). His research interests include greenhouse management and control; Energy in agriculture, particularly photovoltaics; Computer-controlled data acquisition and instrumentation; Fluid mechanics and heat transfer in agriculture. He has published over 110 papers in reviewed journals and conference proceedings and presented his studies at many international conferences. He has often been invited as a speaker in professional and international meetings. He teaches graduate and undergraduate courses on greenhouse technologies in the Robert H. Smith Faculty of Agriculture, Food and Environment of the Hebrew University of Jerusalem.

07:00-07:30 **Bright Prospects for Solar PV End of Life Management in India**

Jaideep N. Malaviya, Malaviya Solar Energy Consultancy, India



Jaideep N. Malaviya has an Electronics Engineering degree and has specialised in solar energy engineering and designing. He has long 19 years of experience in solar energy and worked at TATA Electric Co., The Energy Resources Institute. He is associated with IREDA Ltd, Solar Thermal Federation of India (STFI), Petroleum Conservation Research Association, Solar Promotion International GmbH, BVA Bielefelder Verlag GmbH & Co. KG and solrico GmbH. His vast experience in the field also invites articles and columns from several Indian dailies and international publications.

07:30-08:00 **Thermal Energy Storage for Next Generation Solar Energy Technologies**

Yulong Ding, University of Birmingham, UK



Yulong Ding is the founding Chamberlain Chair of Chemical Engineering at the University of Birmingham (UoB). He is the founding Director of the UoB Centre for Energy Storage and founding Co-Director of Joint UoB-GEIRIEU Industrial Lab for Energy Storage Research. He joined Birmingham in October 2013. Prior to this appointment, he was Professor and Director of the Institute of Particle Science & Engineering at the University of Leeds. He is a recipient of three 2019 IChemE Global Awards in Research Project, Energy and Outstanding Achievement for his work on cPCMs, Distinguished Energy Storage Individual Award in 2018 Beijing International Energy Storage and Expo; Cryogenic Energy Storage Research Chair Award of Royal Academy of Engineering in 2014; Beijing Municipal Science and Technology Progress Award for Advanced Compressed Air Energy Storage research in 2014.

08:00-08:30 **The Future of Photovoltaics: PV Entering the Terawatt Age**
Eicke Weber, University of California, Berkeley, CA



Eicke R. Weber Born on October 28, 1949, in Mutterstadt, Germany, he received his doctorate in physics from the University of Cologne in 1976. After research stays at the State University of New York, Albany, USA and the University Lund, Sweden, he habilitated in 1983 also at the University of Cologne. In the same year he took a job as professor at the University of California, Berkeley in the Department of Materials Science and Engineering. In July 2006, he became director of the Fraunhofer Institute for Solar Energy Systems ISE in Freiburg and simultaneously professor in the departments of mathematics and physics and of engineering at the Albert Ludwig University in Freiburg. In July 2008 he was appointed as director of the SEMI International Board of Directors. Since April 2010, Weber is a member of acatech, the German Academy of Technical Sciences, Berlin.

08:30-08:50 Break

Oral Presentations

Scientific Session-II

- 08:50-09:10 **Solar Water Desalination using a Hybrid Solar Still: A Sustainable Approach**
Amimul Ahsan, Islamic University of Technology, Bangladesh & Swinburne University of Technology, Melbourne, Australia
- 09:10-09:30 **Dynamic Stability Analysis of Low Inertia Grid: PV Integration**
Ragini Meshram, Veermata Jijabai Technological Institute, India
- 09:30-09:50 **Meeting Mid-day Peak Loads through Distributed Rooftop PV Systems: Tale of Two Cities**
Krithi Ramamritham, Indian Institute of Technology, India
- 09:50-10:10 **Designing Heterostructured Systems for Efficient Solar to Hydrogen Energy Conversion**
Tokeer Ahmad, Jamia Millia Islamia, India
- 10:10-10:30 **Solar Energy Application: A Decade Review**
Lata Gidwani, Rajasthan Technical University, India
- 10:30-10:50 **Measuring Solar Reflectivity of Canadian Building Envelop Materials to Assess their Impacts on Urban Overheating**
Zahra Jandaghian, National Research Council of Canada, Canada
- 10:50-11:10 **H₂S Photolysis at Non-standard Conditions**
Adrian C. Cavazos Sepulveda, Arsamco, Saudi Arabia

11:10-11:30 Break

Chair: **Siddharth Sareen**, University of Stavanger, Norway

- 11:30-11:50 **Analyzing the Impact of Severe Temperatures on Energy Systems in New York City**
Deepak Kumar, University at Albany, Albany, NY
- 11:50-12:10 **Cognate Aspects of Solar Energy Transitions**
Siddharth Sareen, University of Stavanger, Norway

- 12:10-12:30 **Study of Extended Defect Formations *in Situ* During Laboratory Scale Cast-mono Directional Solidification of Silicon**
Gabrielle Regula, Provence Institute of Materials Microelectronics
Nanosciences, France
- 12:30-12:50 **Analysis of the last PV Developments in Albania and Recommendations for Advocacy Actions**
Lorenc Gordani, Tirana Business University, Albania
- 12:50-13:10 **Coordinated High-Speed Voltage Control in Real-Time Unobservable Active Distribution Systems**
Anamitra Pal, Arizona State University, Tempe, AZ
- 13:10-13:30 **Towards 26% Solar Cells in Mass Production with Doped Poly-silicon Contacts**
Daniel Macdonald, Australian National University, Canberra, Australia
- 13:30-13:50 **Seasonal Energy Storage Technologies to Store Solar Energy**
Julian David Hunt, International Institute for Applied Systems Analysis, Austria

End of Day-02



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