Energy Storage for Manufacturing and Industrial Decarbonization Workshop

"Energy StorM"

Enabling Carbon-Free Energy for Industrial Decarbonization

February 8-9, 2022

Hosted by:

Thermal Storage Panel

Panel Chairs:

Sumanjeet Kaur, Materials Research Scientist/Engineer, Thermal Energy Group, Berkley Lab

Julie Slaughter, Scientist II, Ames Laboratory

Panelists:

Reyad Sawafta, Co-Founder & Chief Technology Officer, Phase Change Solutions

Bao Truong, Technical Lead, Strategic Initiatives, Malta Inc.

Torbjörn Lindquist, Chief Technology Officer, Azelio

Maxwell Steffen Cameron-Jones, Process Project Engineer, Siemens Gamesa

David Bierman, Co-Founder, Antora

Paul Gauche, Head of Engineering, Heliogen

Travis McLing, Research Scientist, Idaho National Laboratory

Biographies

Dr. Sumanjeet Kaur, a Research Scientist and Group Leader at Lawrence Berkeley National Laboratory, performs research on thermal energy storage. She is a material scientist and has extensive background in material synthesis and characterization, as well as in various thermal metrologies. Her current research projects include development of dynamically tunable thermal

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energy storage, thermal switches and standalone thermal batteries using thermochemical materials for various applications.

Dr. Julie Slaughter is a scientist at Ames Laboratory leading projects on next-generation heat pumping and thermal energy technologies. She has more than 25 years of applied R&D experience at the Laboratory and at small R&D companies with expertise in caloric materials, smart/adaptive materials and developing early-stage technology demonstration systems.

Dr. Reyad Sawafta is a serial entrepreneur starting his first company in 2004, developing smart materials for water and energy applications. He obtained his M.Sc. and Ph.D. in Quantum Physics and Nuclear Physics from the University of Alberta, and held various positions of increasing responsibility in academia, the US Department of Energy, and the private industry. He is a recognized global expert and thought leader in smart materials, phase change technology, computational science, biotechnology, and nanotechnology. Dr. Sawafta has served on several advisory committees and boards and has received many prestigious awards. He holds numerous patents and patent applications, authored more than 175 scientific papers and has delivered over 200 invited talks worldwide.

Bao Truong joined Malta as the Senior Systems Engineer with a background in nuclear engineering and a decade of experience in developing and implementing systems engineering strategies in a startup environment. Bao is a Certified Systems Engineering Professional (CSEP) with broad experience in system requirements development, system design and integration, verification & validation, and operational excellence.

Creating sustainable clean energy solutions to improve the quality and equity of life around the world has been the animating purpose of Bao's professional journey. Prior to joining Malta, Bao worked at TerraPower, an advanced nuclear energy startup. His work there spanned all aspects of systems engineering, including requirements development, integrated system analysis, testing, safety analysis, engineering processes, verification & validation, training and mentoring, and product development. He spearheaded the application of formal systems engineering to the development of advanced nuclear reactors, managed the Design Integration group, and served as the company's go-to expert on systems engineering. Before TerraPower, Bao was a Nuclear Regulatory Commission (NRC) certified Senior Reactor Operator for 6 years at the MIT research reactor.

Bao has earned many prestigious honors throughout his career, including being among the top 80 young STEM leaders in the U.S. selected to attend the Frontiers of Engineering and the National Academies Keck Futures Initiative conferences. During his graduate studies, he received the Nuclear Engineering University Program and NRC graduate fellowships. Bao holds BS degrees in Physics and Nuclear Engineering and MS and PhD degrees in Nuclear Engineering, all from MIT. He also holds Professional Engineering licenses in Mechanical Engineering in Massachusetts and Washington.

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Torbjörn Lindquist is operating as CTO at Azelio AB and is a member of the management team. In this role, he has led the development of the TES.POD system from basic idea to a commercial product. He is also responsible for IP matters and establishing external and internal research and development projects and networks supporting the development of the product and business.

Prior to joining Azelio, he received his PhD in Energy Science from Lund university in 2002. He has also worked several years for Rolls-Royce where he was appointed Engineering fellow with a broad field of expertise such as in energy systems, thermodynamics, heat transfer, combustion, chemical engineering, physics, processes, gas turbines and engines. He has a long experience in establishing and leading international research and collaboration projects funded by EU and national governments.

Paul Gauche is a mechanical engineer with over 25 years of R&D experience in startup, large corporation and academic environments spanning solar energy, semiconductors, and engineering simulation software. As Head of Engineering at Heliogen, Paul is responsible for co-leading and managing the company's Engineering group.

Travis McLing has been working in the field of geology and geochemistry since 1988. He is considered an expert in the fields of geologic mapping, fieldwork, carbon sequestration, geomicrobiology and hydrochemistry. He has spent the last seven years on the development of geochemical models to aid in the characterization of carbon dioxide transport at potential storage sites. In his current capacity, McLing serves as the carbon storage lead for INL and the Center for Advanced Energy Studies (CAES), where he leads the research and business development activities for these institutions. His primary interest in this field is the study of the geochemical mineralization reactions controlling the fate and transport of carbon dioxide in subsurface environments. Currently, he is conducting carbon dioxide related research projects associated with the Big Sky Regional Carbon Sequestration Partnership through DOE, Shell International Exploration, The Idaho Strategic Energy Alliance and the National Energy Technology Laboratory (NETL) Carbon Dioxide Water Issues Task Force. One of his primary projects is the study of natural CCS analogues to identify chemical signatures of mineralization and leakage pathways in the near surface. These projects have received national recognition and have been instrumental in the development of strategies to evaluate potential storage sites for anthropogenic carbon dioxide. McLing has also been appointed to the Idaho Governor's Carbon Sequestration Advisory Committee as the chair of the Idaho Carbon Issues Task Force.

Maxwell Steffen Cameron-Jones is a Process Project Engineer working at Siemens Gamesa in the technology development team responsible for the Electric Thermal Energy Storage (ETES) technology. He has worked in the field of long duration energy storage for two technology providers in the last 4 years. Currently, he is working on the engineering designs for commercial scale projects realizing the integration of ETES into existing power generation infrastructure.

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Maxwell holds a Master's Degree in Chemical Engineering and an Associate Member of the Institution of Chemical Engineering.

David Bierman is a co-founder of Antora Energy and leads the development of their long-duration thermal storage product. David earned his PhD from MIT, where he developed a world-record thermophotovoltaic device, which was recognized as one of the top 10 Breakthrough Technologies in 2017 by the MIT Technology Review, as well as a finalist for the World Technology Award. David was a Cyclotron Road Entrepreneurial Fellow, as well as an MIT Energy Initiative Fellow. In 2018, David was recognized by Forbes Magazine as a top 30 Under 30 in the Energy space.

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