Texas A&M Energy Institute

Distinguished Lecture Series in Energy

TEXAS A&M UNIVERSITY Energy Institute

Innovation and Creativity – Fueling the Solutions of Today's Critical Food, Energy, and Water Challenges

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Emeritus Professor of Mechanical and Biomedical Engineering



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Frederick E. Giesecke Engineering Research Building Third Floor Conference Room and Zoom

Abstract

This talk will focus on innovation, a word that is used quite freely in today's technology space, and creativity, a word not often associated with engineers/engineering. Both of these are needed to effectively solve many of the critical challenges we face in our studies, jobs, and research. In addition, as in the Energy Institute, there is the opportunity and challenge to work within multidisciplinary approaches for education, research, and partnerships. I will go over a few pointers, taken from some experts, that I have used over my 37-year academic career and seen in action during my time at the National Science Foundation. Two authors stand out in this space: Curtis Carlson (Innovation - The Five Disciplines for Creating What Customers Want), former president and CEO of SRI International, and Ed Catmull (Creativity, Inc. Overcoming the Unseen Forces that Stand in the Way of True Inspiration), former President of Pixar Animation and Disney Animation. Both authors have made a tremendous impact in technology areas. I have been fortunate to hear both speak multiple times and am inspired by their words and advice. I have used their suggestions multiple times in my career as a researcher, department chair, Dean, and also as a Division Director at NSF. A case study from Boise State University, NSF Convergence Accelerator Track J: Dairy Protein Product Research and Innovation Hub, led by Drs. Owen McDougal (chemistry) and Tim Andersen (computer science) will be presented, but this will be an interactive discussion on how innovation and creativity, in the context of a multidisciplinary approach, are helping solve the challenges within the food, energy, and water ecosystem.

Biography

JoAnn S. Lighty is an emeritus professor of Mechanical and Biomedical Engineering at Boise State University. She recently stepped down as a Special Assistant to the Provost and Acting Chair of the Department of Chemistry and Biochemistry. From July 2017 to January 2025, she was Dean of the College of Engineering at Boise State University. She has a B.S. and a Ph.D. in chemical engineering, both from the University of Utah (UU). As dean, she had a continued commitment to excellence in research and collaborations with industry. Under her tenure, research expenditures increased nearly threefold from $6.5M to over $18M. With over 3000 students, her focus on student success and workforce development led to the formation of the Micron Student Success Center.

From 2013-2017, Dr. Lighty served as a Division Director at the National Science Foundation, leading the CBET Division, one of the largest in the Engineering Directorate with 16 programs. She was one of the architects of the NSF Innovations on Food, Energy, and Water Systems (INFEWS), one of the first convergence approaches to research. Prior to joining Boise State, Lighty was a professor of Chemical Engineering at UU, where she held several leadership positions. Lighty is a fellow of the American Institute of Chemical Engineers (AIChE) and the American Association for the Advancement of Science. She has served on national boards and committees focusing on the environmental aspects of combustion.

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