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JCESR'S NEW PARADIGM FOR BATTERY R&D - ONE YEAR LATER



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ABSTRACT:

The Joint Center for Energy Storage Research (JCESR) develops transformational concepts and technologies for portable electricity storage for transportation and stationary electric storage for the electricity grid. JCESR looks beyond today's Li-ion technology to innovative next generation energy storage materials and phenomena to achieve factors of five higher performance and lower cost. These aggressive targets are essential to enable next generation energy technologies such as wide deployment of electric vehicles, integration of wind and solar generation on the grid, and designer microgrids tailored to serve local needs.

JCESR will leave three legacies: a library of fundamental science of the materials and phenomena of energy storage at atomic and molecular levels, transformational prototypes at the research and proof-of-concept stages for transportation and the grid, and a new paradigm for battery research that integrates discovery science, battery design, research prototyping and manufacturing collaboration in a single highly interactive organization. JCESR's new paradigm will significantly accelerate the pace of discovery and innovation and shorten the time from conception to commercialization for next generation batteries.

JCESR's research progress and future directions will be highlighted.

BIOGRAPHY:

George Crabtree is Director of the Energy Initiative and Distinguished Professor of Physics, Electrical, and Mechanical Engineering at University of Illinois at Chicago and Director, Joint Center for Energy Storage Research (JCESR) at Argonne National Laboratory. He has won numerous awards for his research, including the Kammerlingh Onnes Prize for his work on the physics of vortices in high temperature superconductors. This prestigious prize is awarded once every three years; Dr. Crabtree is its second recipient. He has won the University of Chicago Award for Distinguished Performance at Argonne twice, and the U.S. Department of Energy's Award for Outstanding Scientific Accomplishment in Solid State Physics four times, a notable accomplishment. He has an R&D 100 Award for his pioneering development of Magnetic Flux Imaging Systems. He is a Fellow of the American Physical Society, a charter member of ISI's Highly Cited Researchers in Physics, a member of the U.S. National Academy of Sciences and a Fellow of the American Academy of Arts and Sciences. Dr. Crabtree has served as Director of the Materials Science Division at Argonne, as Chairman of the Division of Condensed Matter Physics of the American Physical Society, as a Founding Editor of the scientific journal *Physica C*, as Divisional Associate Editor of *Physical Review Letters*, as Chair of advisory committees for DOE and NSF research centers and as Editor of several review issues of *Physica C* devoted to superconductivity. He has published more than 400 papers in leading scientific journals, has collected over 17,000 career citations, and has given over 150 invited talks at national and international scientific conferences. His research interests include next generation battery materials, sustainable energy, materials science, nanoscale superconductors and magnets, vortex matter in superconductors, and highly correlated electrons in metals. He has led workshops for the Department of Energy on hydrogen, solar energy, superconductivity, materials under extreme environments, basic science for energy technology, and computational materials and chemistry for economic competitiveness. He co-chaired the Undersecretary of Energy's assessment of DOE's Applied Energy Programs.