Symposium Honors the Diverse Contributions of Jim Evans

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Editor's Note: This is excerpted from an article that first appeared on MaterialsTechnology@TMS at <http://materialstechnology.tms.org/EST/article.aspx?articleID=2967>.

A tricky aspect about organizing a symposium reflecting the contributions of James W. Evans is simply managing the broad range of topics that represents his body of work. As Brian Thomas, Professor of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, and symposium organizer observed, "Jim works in everything."

The Jim Evans Honorary Symposium, slated for the TMS 2010 Annual Meeting in Seattle, Washington, February 14–18, will examine the wide ranging technologies that have been investigated by Evans over the course of his career. Evans attributes his multi-faceted research interests to a "curiosity about how the world works" that has guided him since a teenager. "Since my late 20s, I have regarded myself as an engineer," he said. "I felt this offered a greater opportunity to make a difference."

As Professor of Metallurgy Emeritus and the P. Malozemoff Chair of Mineral Engineering Emeritus at the University of California, Berkeley, Evans is still heading two research projects and mentoring three graduate students, saying, "It's hard to break away from Berkeley." In fact, Evans points to his arrival at Berkeley as an assistant professor in 1972 as a key milestone in his career, joking, "I thought I'd only be here a year or two until they discovered how incompetent I am."

It was also at Berkeley in 1977 that

Evans was tapped by the U.S. Department of Energy (DOE) to identify approaches to reducing energy consumption in the aluminum industry through mathematical modeling. Evans' interest in modeling had taken root while he was a graduate student at the State University of New York at Buffalo, where the late Julian Szekely, an early pioneer in mathematical modeling of materials processing operations, served as his research advisor. "It was a fortunate time to enter the modeling field," said Evans. "The computational power of mainframe computers was increasing substantially and we could, for the first time, address problems in a thorough, practical way."

Evans' early research for the DOE focused on modeling Hall-Héroult cells, with the work earning him and his collaborators the AIME Extractive Metallurgy Science Award in 1983, one of the first of numerous honors that Evans has received through his career. At the 2010 TMS Annual Meeting, he will add another to the list by being inducted as a TMS Fellow.

A TMS member since he was a graduate student in the late 1960s, Evans has served as chair of the Aluminum Committee and was selected as a TMS Anniversary Laureate, presenting, "Light Metals: 50 Years of Technological Progress" at the society's 50th anniversary plenary series in 2007. Evans also notes that he has attended nearly every TMS Annual Meeting since 1977, saying "It is the best forum for the exchange of ideas in my field, both in terms of papers and conversations in hallways."

Evans himself has contributed significantly to those conversations through his research on the impact of rate phenomena on the productivity of processes for producing metals and

other materials and his investigations into such technologies as aluminum reduction cells, electromagnetic casters, chemical vapor deposition, fluidized bed electrodes, and batteries.

Looking to the future, Evans said that a priority for materials science and engineering is to develop ways to produce materials with less consumption of energy and lower greenhouse gas emissions. In fact, achieving those efficiencies through enhanced instrumentation is the focus of a small company, Wireless Industrial Technologies (WIT), that Evans launched with two colleagues in 2005. Evolved from a Berkeley research project, WIT employs wireless sensor networks to provide measurement and control of industrial processes that have typically been poorly instrumented due to the costs and dangers of running wires. In coming back full circle to Evans' early research at Berkeley, the initial application of the WIT technology was to wirelessly instrument ten Hall cells.

Evans said that being open to ideas and possibilities created by "happencstance," as he terms it, has played a large role in guiding his research interests. His advice to materials engineers and scientists starting out is to seek a balance with the opportunities presented to them. "You have to have confidence in your ideas without being dogmatic about them, and be prepared for rejection—it's not personal," he said. "Plan your career so that you don't go off into too many tangents, but don't become too narrowly focused. If you are just the company expert on the effect of oxide impurities on the mechanical properties of titanium, chances are you are likely to remain that expert."

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