



Phillip Mackey

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John F. Elliott LECTURER

Lecture

The AIIST John F. Elliott Lectureship was established in 1990. This honorary lectureship is designed to acquaint students and engineers with the exciting opportunities in chemical process metallurgy; inspire them to pursue careers in this field; inform the public of the contributions of chemical process metallurgy and materials chemistry to the association; and honor the late Prof. John Elliott of the Massachusetts Institute of Technology for his many accomplishments and the leadership that he provided during his career.

Biography

Phillip Mackey is a well-known metallurgist in the field of non-ferrous extractive metallurgy. He was involved in the development of not one but two significant copper smelting technologies that have benefited copper metallurgical plants around the world. Mackey obtained a BSc (Honours) from the School of Metallurgy at the University of New South Wales, Australia, and completed his doctorate there in 1969. He then moved to Montreal to join Noranda Research Centre, which was then striving to develop a new autogenous smelting process. At Noranda, Mackey, with others, helped develop the Noranda Reactor Process, the world's first continuous copper smelting and converting process. He was later instrumental in developing the Noranda Converting Process. He was involved with other initiatives during his career including new developments for processing lateritic nickel deposits. Mackey was a co-founder of the Copper-Cobre conferences, which expanded from a joint Canadian-Chilean enterprise to embrace the entire global industry. He is a past president of the Metallurgical Society (METSOC), and a Fellow of CIM and of The Minerals, Metals and Material Society (TMS) in the U.S. His CIM and METSOC Awards include the Silver Medal (2006), a Special Medal of Honour (2007), the Selwyn G. Blaylock Medal (2010), and the prestigious Airey Award (2012) for "outstanding contributions" to the field of extractive metallurgy. Mackey has authored or co-authored more than 100 technical papers covering diverse aspects of non-ferrous metallurgy. Mackey is on the Board of Hazen Research of Golden, Colo., USA. The Phillip Mackey Symposium was held in his honor at the 2019 Copper Conference in Vancouver. He will be inducted into the Canadian Mining Hall of Fame in the spring of 2022.

Abstract

The Importance of the Metals Industry in a Low-Carbon Economy – A look at Future Technologies

Climate change has emerged as a major topic in today's world with wide-ranging discussions underway on efforts to reduce greenhouse emissions. The metals industry will play a crucial role in this transition to a low-carbon world economy. Thus, nickel and cobalt are important battery materials for electric vehicles while due to copper's unrivaled electrical properties, the red metal is key for achieving low carbon emissions. On the other hand, new infrastructure projects worldwide all require steel. This lecture will provide an overview of world nickel, copper and steel industries covering production and demand, technology, present energy consumption and CO₂ emissions. The entire metals industry is part of the solution to climate change and this industry will undergo significant technology change in future while providing the metals required. How will the technology challenges in the metals industry be met? This lecture will examine potential future developments and explore exciting technology alternatives, including the potential application of hydrogen in both steelmaking and non-ferrous metallurgy. This is certainly an exciting time to be studying metals and materials.