Fossil-based Technologies for Energy

Abstract
Global population growth and emerging affluence will double energy demand by 2050, with more than 50% of supply being met by fossil energy resources while awaiting renewable alternatives to become material later this century. Technology capabilities must continue to evolve to access deepwater resources, enable recovery and refining of difficult hydrocarbons, provide transport and distribution of newly found gas supplies to global markets, develop renewable energy systems, and to ensure safe stewardship for energy systems and chemicals, while also mitigating impacts of energy production and use on climate, resources, and the environment. In this seminar, opportunities and challenges across the range of fossil and renewable energy solutions will be presented, as an overview of the evolving energy technology landscape. Technical expertise to supply current and future energy will remain in high demand for decades to come, given the scope of underlying challenges, and diversity of future energy supplies. It is, and will continue to be an exciting time to work in the energy field!

Biography
Joe Powell (Joseph B. Powell, Ph.D.) is a Fellow of the American Institute of Chemical Engineers, and has been Shell’s Chief Scientist - Chemical Engineering since 2006. In 1988 he joined the Process Development Department at Shell Technology Center Houston, where he has led major R&D programs in new chemical processes, biofuels, and enhanced oil recovery, in addition to a Hunters innovation group. Dr. Powell has been granted more than fifty-five U.S. patents (another 60+ pending) and several industry awards, including the A. D. Little Award for Chemical Engineering Innovation (AIChE 1998), R&D100 Award (R&D Magazine) and American Chemical Society Team Innovation Award (2000), U. Wisconsin College of Engineering Distinguished Achievement Award (2009), AIChE Process Development Division Service Award (2012). He is co-editor and chapter author for the book Sustainable Development in the Process Industries: Cases and Impact, John Wiley & Sons, New York (2010), and has served AIChE in various roles including Process Development Division Programming chair, Spring Meeting Program Chair (2015) and Co-Chair (2012), Chemical Technology Operating Council, Executive Board Programming Committee, Pilot Plants 12B Area Chair, Shale Gas and Sustainability Topical Chairs. He currently serves on the U.S. National Academy Board on Chemical Sciences and Technology, and editorial committee of Annual Review of Chemical and Biological Engineering. Dr. Powell obtained a Ph.D. in Chemical Engineering from the Univ. of Wisconsin-Madison (1984), following a B.S. in Chemical Engineering from the Univ. of Virginia (1978). Powell is a member of the Advisory Council in the Artie McFerrin Department of Chemical Engineering at Texas A&M University.