College of Engineering
Department of
Mechanical & Industrial Engineering

The Sidney E. Fuchs Seminar Series

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1200 Patrick F Taylor Hall

Options and opportunities for catalytic conversion of hydrocarbons to clean energy

by James Spivey*

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The “shale revolution” has provided new opportunities for the conversion of natural gas into clean energy. These immense resources will allow us to take advantage of new catalysts for improved processes, including the conversion of natural gas into liquid transportation fuels, reformed hydrocarbons into gases for fuel cells, for example. Many of these processes require catalysts that operate at demanding conditions, e.g. temperatures well above 900 deg C. There are new advances in synthesizing , characterizing, and “designing” catalysts for these applications. LSU has been at the front of these developments and will continue to be so.

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Dr. James J. Spivey is the J. M. Shivers and C.M. Eidt,Jr. Professor of Chemical Engineering at Louisiana State University. He is Editor-in-Chief of Catalysis Today, and Editor of the Royal Society of Chemistry's Catalysis book series. He has written/edited a total of 17 books over the last 15 years, and has authored more than 100 publications. His research focuses on the development and characterization of heterogeneous catalysts for applications such as environmental catalysis and synthesis of chemical intermediates from simple carbon feedstocks such as methane. Other research activities include the application of the principles of heterogeneous catalysis to catalytic combustion, control of sulfur and nitrogen oxides from combustion processes, acid/base catalysis (e.g., for condensation reactions), hydrocarbon synthesis, and the study of catalyst deactivation. He has managed over $30 million in sponsored projects over the past 20 years. He currently is Director of the Center for Atomic-level Catalyst Design at LSU one of 46 new multi-million-dollar DOE Energy Frontier Research Centers. He leads a team of 21 investigators from 10 leading research universities with demonstrated expertise in computational catalysis; advanced materials preparation methods, surface spectroscopy, and experimental testing.