**Selected Topics Related to Energy and Chemicals**

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***Abstract***

In the presentation, some selected research programs to produce energy carriers and valuable chemicals from new or renewable sources, currently being conducted or recently completed in my laboratory, will be discussed. These include (i) hydrogen generation for PEM fuel cell vehicle applications, (ii) catalytic upgrading of bio-oils, and (iii) utilization of glycerol, a biodiesel waste product, for production of valuable chemicals and fuels. The research relies on development of new catalytic materials and/or processes and demonstrates successful applications of the principles of chemical and catalytic reaction engineering to solve problems of contemporary interest.