



# BERKELEY CATALYSIS CENTER

Seminar

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775 Tan Hall

4:00-5:30

*V. A. Sadykov*

*Boreskov Institute of Catalysis SB RAS,  
Novosibirsk, Russia*

Reformation of gaseous and liquid hydrocarbon fuels into syngas at short contact times: design of monolithic catalysts and process parameters.

*ABSTRACT:*

Monolithic catalysts based upon nanostructured metal-oxide active components on monolithic substrates including heat – and electric current- conducting ones were designed. The active components are comprised of ceria-based complex oxides with a high oxygen mobility and optimized reactivity promoted by Pt, Ru, Ni or their combination with perovskite-like mixed oxides. Monolithic substrates are made of refractory alloy foil/microchannel plates or microchannel cermets. For a given fuel (natural gas, isooctane, decane, gasoline) and a type of reforming process (selective oxidation by the oxygen of air, autothermal or steam reforming), the composition of the active component and support properties are tuned. At operation temperatures in the range of 800-1100 oC and short contact times, catalysts ensure the equilibrium composition of reformat being stable to coking, sintering and thermal shocks. Rapid start-up is easily ensured by passing the electric current.