

## **Selective Oxidation over Bulk Mixed Metal Vanadates and Supported Vanadium Oxide Catalysts**

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Bulk mixed metal vanadates and supported vanadium oxide catalysts find wide application as selective oxidation catalysts, but many fundamental questions are still unresolved about these important catalytic systems. To better understand the similarities and differences between bulk mixed metal vanadates and supported vanadium oxide catalysts, their molecular and electronic structures were spectroscopically determined (*in situ* Raman and UV-vis spectroscopy) and their surface reactivity was chemically probed with CH<sub>3</sub>OH (CH<sub>3</sub>OH-Temperature Programmed Surface Reaction (TPSR) spectroscopy and steady state methanol oxidation). The fundamental relationships found between bulk mixed metal vanadates and supported vanadium oxide catalysts will be presented.