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VABILO NA PREDAVANJE / INVITATION TO THE LECTURE

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Velika predavalnica Kemijskega inštituta / Lecture Hall at the National Institute of Chemistry, Hajdrihova 19, Ljubljana

HIGH TEMPERATURE H_2S REMOVAL AND SELECTIVE CATALYTIC OXIDATION OF H_2S

Due to its toxic and corrosive nature, H_2S should be safely removed from the gases produced in gasification or combustion processes. In our previous studies, a number of metal or mixed metal oxides (Cu, V, Mo, Mn, Fe, Ce) were investigated for high temperature removal of H_2S as sorbent and selective oxidation of H_2S as catalyst. These sorbents were synthesized by the complexation method. Characterization results showed that mixed metal oxides such as $Cu_2V_2O_7$, $CuMoO_4$, $CeVO_4$ can be obtained in a highly porous structure with a moderate BET surface area. Reaction mechanisms proposed were tested by using the concentrations versus time data of H_2S, SO_2 and H_2O in the effluent stream of the fixed-bed reactor. The deactivation model developed was applied to predict sorption rate parameters. Among the mixed oxides studied in our group, Mn-Ce and Mn-Cu mixed oxide sorbents showed higher reactivity, higher retention capacity and good regenerability properties. In addition to these mixed metal oxides, mesoporous supported (copper incorporated MCM-41) sorbents were developed and used for H_2S sorption. All Cu-based, Ce-based and Fe-based mixed oxide catalysts gave high activity and selectivity for H_2S oxidation. Oxidation state of active metal in catalyst structure has a crucial effect on selective oxidation of elemental sulfur. Incorporation of ceria into Fe based catalyst significantly improved the redox ability of the catalyst.

In this presentation, a review of our studies on high temperature H_2S removal and selective catalytic oxidation of H_2S to elemental sulfur will be given.

Vljudno vabljeni! / Kindly invited!

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