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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**

# FROM SYNTHESIS GAS TO A DIESEL FUEL ALTERNATE DIMETHYL ETHER OVER NEW SOLID ACID CATALYSTS

Due to fast depletion of petroleum and combustion related environmental concerns, development of green transportation fuel alternatives have attracted major attention of researchers and fuel producers. Dimethyl ether (DME) is a highly promising transportation fuel candidate due to its clean burning and excellent diesel fuel properties. It has high cetane number (55-60). Also, very low particulate matter and $NO_x$ emissions were reported during its combustion. Having similar physical and fuel properties, it was also considered as a good alternative to LPG. DME can be produced either by dehydration of methanol or directly from synthesis gas. Direct synthesis of DME from synthesis gas has major thermodynamic advantages over a two step process involving methanol synthesis and dehydration reactors being operated in series. However, development of bi-functional catalytic systems, involving both methanol synthesis and dehydration sites, are needed for direct synthesis of DME with a high selectivity.

In this lecture, a review of our recent work on DME synthesis directly from synthesis gas and also by dehydration of methanol over the new mesoporous solid acid catalysts developed in our laboratory, will be presented. Results obtained with the heteropolyacid incorporated silicate structured mesoporous materials and Nafion-MCM-41, showing very good and stable performances with very high DME selectivity values, will be discussed. In the case of direct synthesis of DME from syngas, importance of feed composition on DME yield will be illustrated.

**Vljudno vabljeni! / Kindly invited!**


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