

PETR

Todd Gardner

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26 - First principle kinetic studies of zeolite-catalyzed reactions relevant for the MTO process

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The methanol-to-olefin (MTO) process, catalyzed by acidic zeolites provides an increasingly important alternative to the production of light olefins from crude oil. However, the various mechanistic proposals for methanol-to-olefin conversion have been strongly disputed for the past several decades. This work provides an overview of various mechanistic cycles to produce both propene and ethene. In all proposed reaction cycles for the MTO process, methylation reactions of various hydrocarbons have been shown to be one of the most important steps. The reaction rates are very much dependent on the particular hydrocarbon pool species that is methylated and on the topology of the zeolite. Within this contribution we will particularly highlight methylation reactions on aromatics and alkenes in ZSM-5, SAPO-34, ZSM-22 other related topologies, as these were proven to be successful catalysts for the MTO process.

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[Acid/Base and Zeolite Catalysis \(08:30 AM - 11:40 AM\)](#)

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