

**Adsorption operations controlled by very slow diffusing species: Modeling and experimental aspects for C6 isomers in zeolites**

Daniel Tondeur\*, Kader Lettat<sup>1</sup>, Elsa Jolimaître<sup>1</sup>,  
Melaz Tayakout<sup>2</sup>

CNRS-Laboratory of Reactions and Chemical Engineering, University of Lorraine,  
Nancy, France;

<sup>1</sup>IFP-Energies Nouvelles, Solaize-Vernaison, France;

<sup>2</sup>CNRS-Institut de Recherche sur la Catalyse, Lyon, France  
(Daniel.Tondeur@ensic.inpl-nancy.fr\*)

This work is motivated by the trend to enhancing the octane number of gasolines by increase of the pool of branched hydrocarbon isomers. This implies an isomerization process coupled with separation of the highly branched from the non-branched and slightly branched isomers. Both isomerization and separation by adsorption or membrane involve MFI-type zeolites, and concern the same species and the same type of interactions between these species and the zeolite.

The present study is upstream of the industrial problem and aims at a better understanding and possibly a predictive modeling of the diffusional processes involved, in view of a rational design and operation of the process as a whole. The study focuses on mixtures of branched C6 isomers (2-Methyl-Pentane, 3-Methyl-Pentane, 2-2 Dimethyl-Butane, 2-3 Dimethyl-Butane) in the liquid phase.