

English summary of the Doctoral Thesis:

(Resumen en inglés de la Tesis Doctoral)

**ESTUDIO DE CATALIZADORES MICROPOROSOS
Mo/ZEOLITA EN LA REACCIÓN DE
DESHIDROAROMATIZACIÓN DE METANO**

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This doctoral thesis shows the study carried out on Mo/zeolite catalysts in the dehydroaromatization reaction of methane (MDA) with the intention to contribute to this technical approximation regarding the valorisation of said reactant. As it is observed from the information contributed in the introductory chapter, methane (main component in natural gas deposits, but also present in those of oil and coal) may be considered, in a near future, as an alternative source to oil in obtaining primary hydrocarbons for the petrochemical industry. Taking into account the state-of-art previous to the start this thesis, it was proposed to develop a series of studies adressed to surpass and improve some of the difficulties referenced in the consulted literature. In this sense, the work was oriented to mitigate the processes involved in the accumulation of coke on the zeolitic acid sites and, this way, reduce the high deactivation rates registered on the catalysts usually employed in this reaction. In brief, the control of the density of zeolitic acid sites (mainly, the excess of Brønsted ones) was designed from distinct approaches: the reduction/elimination of this possible excess by dealumination methods (chapter 5), their reduction by means of selective exchange of the zeolite with mono- and divalent cations (chapter 6) and their reduction by means of the use of a ZSM-5 mesoporous sample (chapter 7). In view of the results obtained in chapter 7, it was considered relevant to analyse the effect that zeolites with large cavities or intersections could have in the tendency to accumulate coke, the obtained data being supported by molecular dynamic modelling (chapter 8). Finally, this thesis incorporates some general conclusions regarding the shown work and, also, the future of the MDA process.