

XPS Investigation of the Electronic Environment in Selected Heterogenized Zirconocene Catalysts

M. Atiqullah,^{1*} M. Faiz,² M. N. Akhtar,¹ M. A. Salim,² S. Ahmed¹ and J. H. Khan¹

¹ Metallocene Catalysts Research Laboratory, Center for Refining and Petrochemicals, The Research Institute, King Fahd University of Petroleum and Minerals, Dhahran 31261, Saudi Arabia

² Surface Science Laboratory, Department of Physics, King Fahd University of Petroleum & Minerals, Dhahran 31261, Saudi Arabia

Ethylbisindenyl zirconium dichloride ($\text{Et}(\text{Ind})_2\text{ZrCl}_2$) and the MAO methylalumoxane (MAO) co-catalyst were heterogenized on Davison silica 955 partially dehydroxylated at 275°C , following the concept of equilibrium adsorption. The influence of MAO on the electronic environment resulting from the heterogenization was investigated using XPS. Heterogenization of $\text{Et}(\text{Ind})_2\text{ZrCl}_2$ and MAO on the above silica generated two types of zirconocenium cations (Cation 1 and Cation 2), independent of the heterogenization methods. Based on the postulated surface chemistry, Cation 1 is presumed to be in the form of an ion-pair $[\text{SiO}]^- [\text{Et}(\text{Ind})_2\text{ZrCl}]^+$, whereas Cation 2 is presumed to be a trapped multi-coordinated crown complex of MAO. In the absence of MAO, only Cation 1 is formed. The present study provides some support for the postulated surface chemistry regarding heterogenization of $\text{Et}(\text{Ind})_2\text{ZrCl}_2$ and MAO on silica. Copyright © 1999 John Wiley & Sons, Ltd.

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