# XAFS studies of the metal-support interface in highly dispersed Rh/Al2O3 and Rh/TiO2 catalysts

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NM 2 EXAFS Studies of the Metal - Support Interface in Highly Dispersed $Rh/Al_2O_3$ and $Rh/TiO_2$ Catalysts.

D.C. KONINGSBERGER, J.H.A. MARTENS, R. PRINS, Eindhoven University of Technology, The Netherlands; D.E. SAYERS, North Carolina State University. X-ray absorption studies on a series of highly dispersed $Rh/Al_2O_3$ and $Rh/TiO_2$ catalysts show, in addition to the expected Rh-Rh coordination, a Rh-O contribution with a coordination distance of about 2.7 Å. This long distance Rh-O contribution arises from the interaction of $O^{2-}$ support neighbours (radius 1.4 Å) with zerovalent Rh atoms (radius 1.34 Å) present in the metal-support interface. Studies of catalysts with different average particle size show that the measured (average) number of Rh-O bonds increases with decreasing Rh-Rh coordination number and therefore particle size. This implies that all particles are three dimensional. By modelling these systems the average Rh-O coordination number was found to vary from 2 to 3. No evidence was found for the presence of Rh ions in fully reduced catalyst. This means that the metal-support interface consists of zerovalent Rh atoms interacting on two or three oxygen ions in registry with the support.