

# Fragmentable Heterogeneous Cocatalysts for the Metallocene-Catalyzed Polymerization of Olefins, I. Surface Modification of Silica and Characterization of the Resulting Carriers

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Surface modification of pre-dried spherical silica nano-particles with diameters of 235 nm and 10 to 20 nm and of commercially available non-spherical silica materials using various aminoalkyltri-alkoxysilanes and  $\alpha$ - $\omega$ -bis(alkoxysilyl)organyls (organyl = alkanediyl, aminoalkanediyl, polyether, polysiloxane) has been performed in suspension in solvents with water. The quantity of water has a dominating influence, as compared to the amounts and the ratios of silanes employed, on the surface morphology of the modified silicas. The morphologies observed range from weakly linked aggregates of spherical particles to large agglomerates covered by thick irregular layers of organopolysiloxane, as demonstrated by scanning electron microscopy. These carriers can be modified further with organoaluminium compounds to yield heterogeneous cocatalysts for the polymerization of ethylene.

*Key words:* Silica, Surface Modification, Electron Microscopy, Silanes, Polymerization Cocatalysts