Controllable Formation of $MgCl_2$-based Spherical Catalyst Support Precursors *via* Composites of Liquid Inorganics and Polymers

Liyi Chen, Christian Hanisch, and Bernhard Rieger

WACKER-Lehrstuhl für Makromolekulare Chemie, Technische Universität München, Lichtenbergstraße 4, 85747 Garching b. München, Germany

Reprint requests to Prof. Dr. Dr. h. c. Bernhard Rieger. Fax: +49/89/289-13562.
E-mail: rieger@tum.de

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Anhydrous $MgCl_2$ was reacted with 2 equiv. of ethanol to generate the $MgCl_2(EtOH)_2$ adduct **1**. An appropriate amount of higher alcohol having a long carbon chain, such as 1-decanol, was anchored on the surface of a part of adduct **1** to give a mixture of $MgCl_2$ adducts having an internal surfactant. A multifunctional polymer/oligomer, *e. g.* poly(ethylene glycol)-200 (PEG-200), was introduced into this system yielding a composite of liquid inorganics and polymers (CLIP). Under the regulation of the internal surfactant and the multifunctional polymer, this composite was melted and dispersed in an inert hydrocarbon solvent under vigorous agitation at elevated temperatures followed by fast cooling to generate a $MgCl_2$-based spherical catalyst support precursor. SEM pictures show that this support precursor has a narrow particle size distribution, and its surface structure is an intricate combination of smaller $MgCl_2$-based crystallites.

Key words: Magnesium Dichloride, Alcohol Adducts, Surfactants, Composites, Supports