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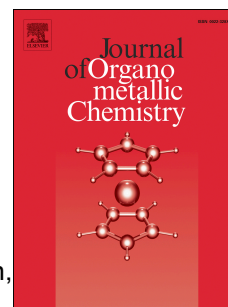
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Research Paper

Novel titanium(IV) complexes stabilized by 2-hydroxybenzyl alcohol derivatives as catalysts for UHMWPE production

Vladislav A. Tuskaev^{a,b}, Svetlana C. Gagieva^a, Dmitry A. Kurmaev^a, Sergey V. Zubkevich^a, Nikolay A. Kolosov^a, Evgenii K. Golubev^{b,c}, Galina G. Nikiforova^b, Victor N. Khrustalev^{b,d}, Boris M. Bulychev^a

^a*Department of Chemistry, M. V. Lomonosov Moscow State University, 1 Leninskie Gory, 119991 Moscow, Russian Federation. Fax: +7 (495) 932 8846. E-mail: b.bulychev@highp.chem.msu.ru*

^b*A. N. Nesmeyanov Institute of Organoelement Compounds, Russian Academy of Sciences, ul. Vavilova 28, 119991 Moscow, Russian Federation*

^c*Enikolopov Institute of Synthetic Polymer Materials, Russian Academy of Sciences, Profsoyuznaya Str., 70, 117393 Moscow, Russian Federation*

^d*Inorganic Chemistry Department, Peoples' Friendship University of Russia, 6 Miklukho-Maklaya St., 117198 Moscow, Russian Federation*

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ABSTRACT A series of titanium (IV) complexes (**2**, **5-7**) stabilized by a substituted 2-hydroxybenzyl alcohols (**1**, **4**) – were synthesized. Structures of complexes **6-7** were determined by X-ray diffraction. Titanium atom in the tetrameric complex **6** has an octahedral environment created by chlorine atom and five oxygen atoms. The main structural feature of **7** is a centrosymmetric Ti_4O_6 cage which is built of two *seco*-norcubanes Ti_4O_3 sharing a common Ti_2O_2 -face. A coordination polyhedron around the titanium atoms is the distorted octahedron, with the long $Ti-\mu-O$ and short $Ti-O$ bonds. All resulting complexes are moderately or highly active in ethylene polymerization in the presence of $\{3Et_2AlCl + Bu_2Mg\}$ binary co-catalyst. Resulting polymers are linear ultrahigh molecular weight polyethylenes (up to $7.9 \cdot 10^6$ g/mole). Polymers are suitable for the modern processing methods – the solvent-free solid state formation of super high-strength (tensile strength over 2.0 – 2.4 GPa) and high-modulus (elastic modulus up to 130 GPa) oriented film tapes.

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