Category

Polymer-Supported Synthesis

Key words

polyhedral oligomeric silsesquioxane (POSS)

Pd–diimine complexes

polymerization

Y. ZHANG, Z. YE* (LAURENTIAN UNIVERSITY, CANADA)

Homogeneous Polyhedral Oligomeric Silsesquioxane (POSS)-Supported Pd–Diimine Complex and Synthesis of Polyethylenes End-Tethered with a POSS Nanoparticle *via* Ethylene "Living" Polymerization
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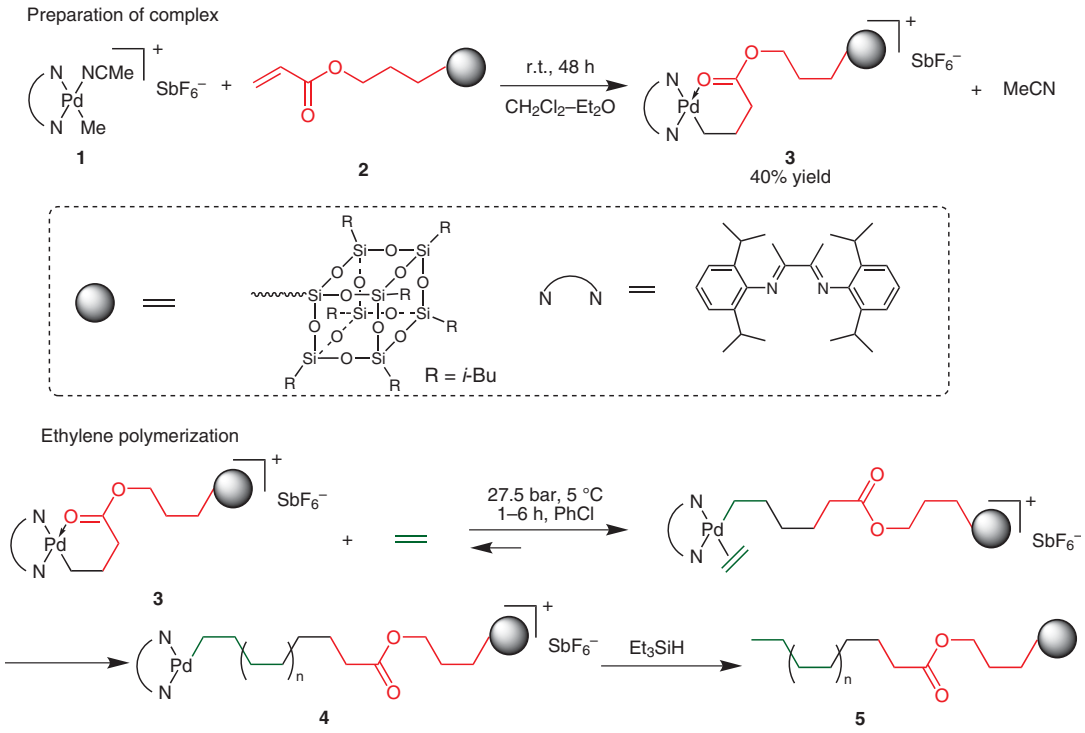
Preparation of Polyethylenes End-Tethered with POSS



Monitoring results of **5**

Time (h)	$Mn_{,GPC}$ (kg/mol)	$PDI_{,GPC}$	$Mn_{,NMR}$ (kg/mol)	Branches (per 1000C)	Time (h)	$Mn_{,GPC}$ (kg/mol)	$PDI_{,GPC}$	$Mn_{,NMR}$ (kg/mol)	Branches (per 1000C)
1	15.2	1.11	11.2	89	4	43.5	1.12	36.3	87
2	24.4	1.17	19.1	88	5	52.4	1.19	45.9	88
3	36.6	1.14	29.6	88	6	56.4	1.17	51.6	87

Significance: Preparation of a homogeneous polyhedral silsesquioxane (POSS)-supported Pd–diimine complex **3** and telechelic polyethylenes end-tethered with POSS nanoparticles **5** was reported. Thus, complex **3** was prepared by the reaction of a Pd–diimine catalyst **1** with acryloisobutyl-POSS **2** at room temperature for 48 h (40% yield). Ethylene polymerization was carried out with **3** at 5 °C under 27.5 bar in chlorobenzene followed by quenching **4** with triethylsilane to afford compound **5**.

Comment: Monitoring results of **5** led to the following conclusions: The number average molecular weight (Mn) was increased in proportion to time (1 h; 15.2 kg/mol vs 6 h; 56.4 kg/mol). The polydispersity index (PDI) value was within 1.11–1.19. ^{1}H NMR measurements exhibited that these polymers were branched with ca. 88 branches per 1000 carbons.

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