Thorium(IV) trialkyl complexes of non-carbocyclic ligands as highly active isoprene polymerisation catalysts

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Experimental details for the polymerization kinetics studies

The catalyst system of complex 1/[Ph₃C][B(C₆F₅)₄]/Al/iBu₃ and complex 2/[Ph₃C][B(C₆F₅)₄]/Al/iBu₃ were selected for investigation into the kinetics of the polymerization of isoprene.

Experimental details: Under a N₂ atmosphere at 25 °C, isoprene (0.34 g, 5 mmol) and a deuterated benzene solution (1.5 mL) of Al/iBu₃ (25 μmol) were added into a 5 mL flask containing a magnetic stir bar. A deuterated benzene solution (1 mL) of complex 1 (4.65 mg, 5 μmol) or complex 2 (5.12 mg, 5 μmol) and [Ph₃C][B(C₆F₅)₄] (9.2 mg, 10 μmol) was added quickly by an injector, the conversion of isoprene with time was monitored by ¹H NMR spectroscopy.