

Supplementary Information

Synthesis of α -Diimine Complex Enabling Rapidly Covalent Attachment to Silica Supports and Application of Homo-/Heterogeneous Catalysts in Ethylene Polymerization

Xiaobei Zhao ¹, Yanhui Hou ^{2,*}, Linlin Ye ¹, Kening Zong ¹, Qingming An ², Binyuan Liu ¹ and Min Yang ^{1,*}

¹ Hebei Key Laboratory of Functional Polymers, Institute of Polymer Science and Engineering, Hebei University of Technology, Tianjin 300130, China

² State Key Laboratory of Separation Membranes and Membrane Processes, School of Material Science and Engineering, Tiangong University, Tianjin 300160, China

* Correspondence: houyh1977@163.com (Y.H.); polyym@163.com (M.Y.)

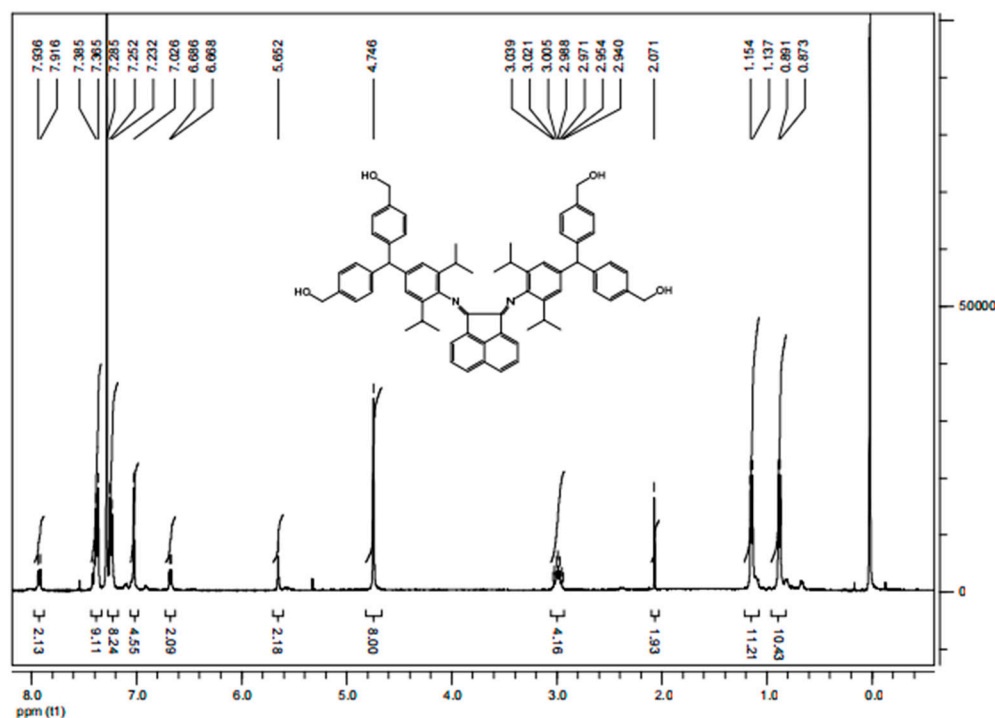


Figure S1 The ¹H NMR spectrum of L1

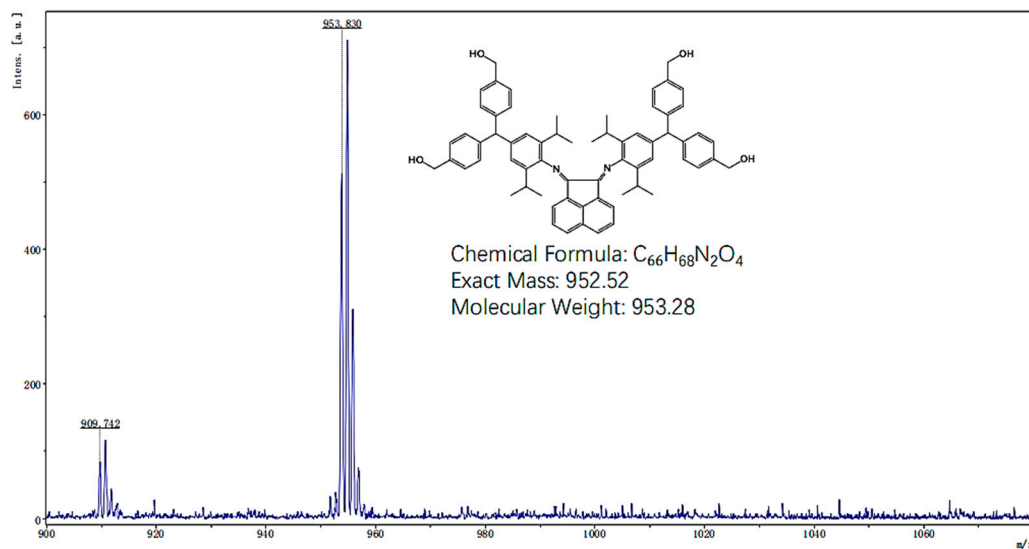


Figure S2 The MS(ESI) spectrum of **L1**

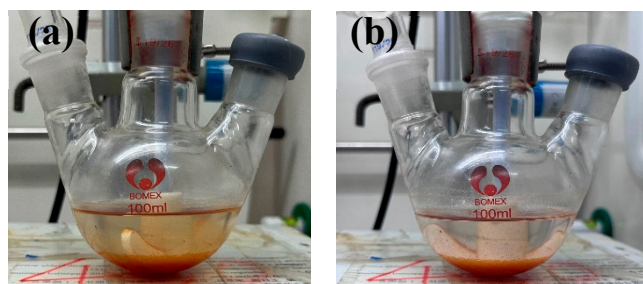
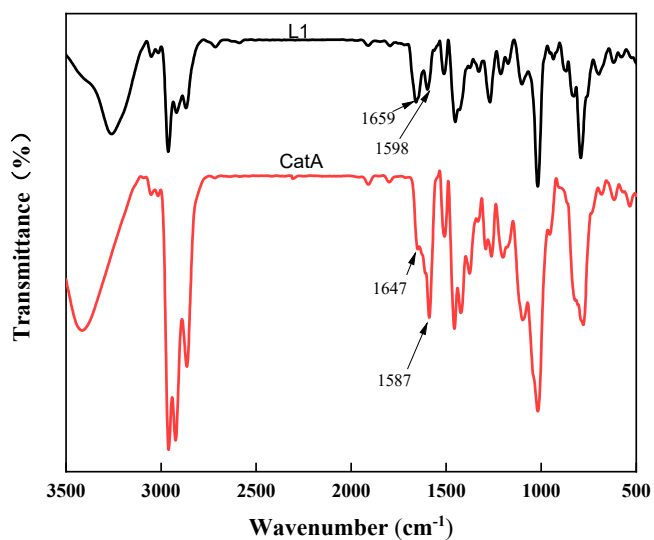
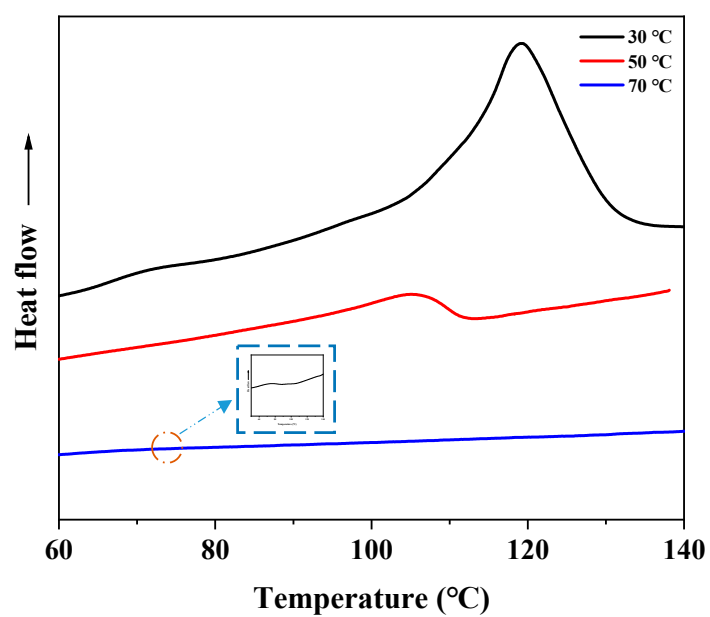


Figure S3 Preparation process of supported catalyst **S-CatA-1**

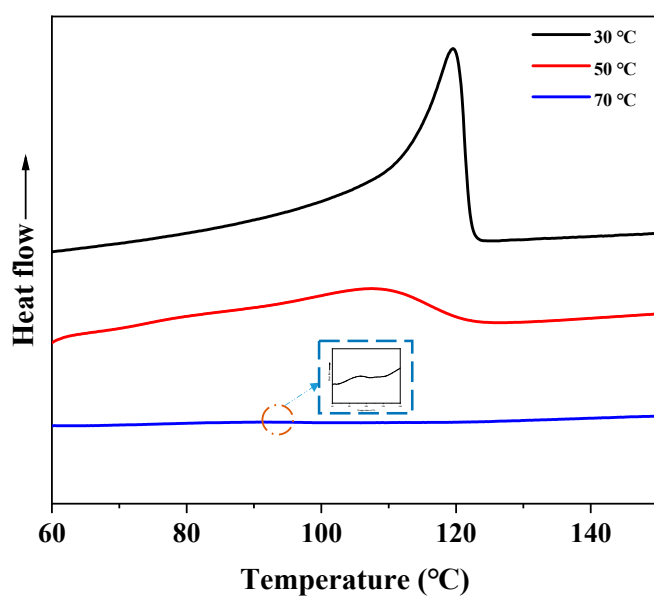
(a) Reaction of 1 minute; (b) Reaction of 5 minutes



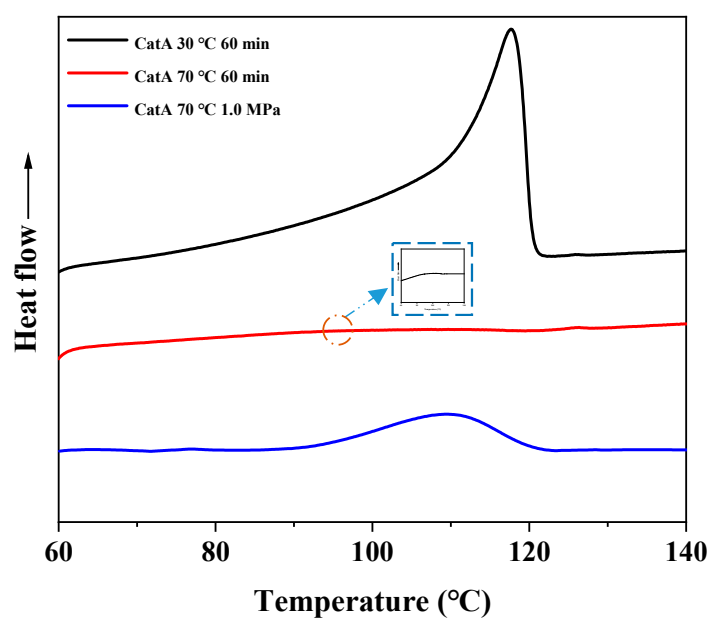
FigureS4 FT-IR spectra of **L1** and corresponding complex **CatA**



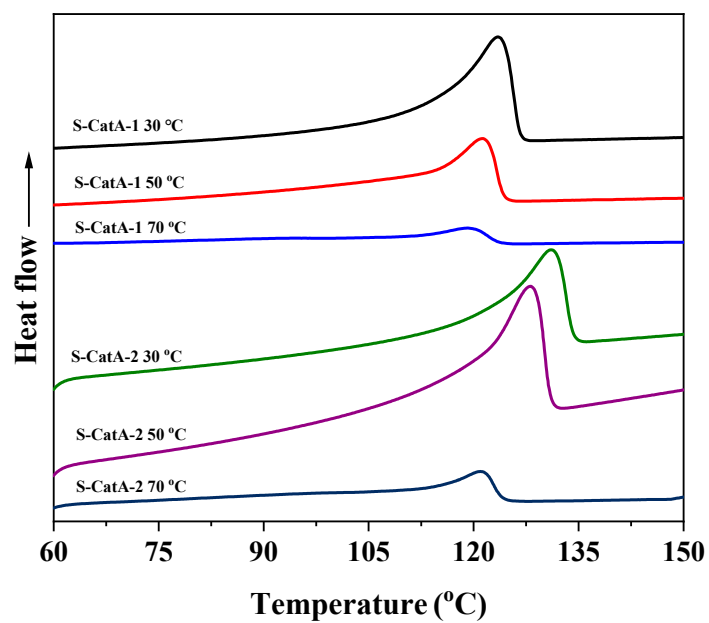
FigureS5 DSC curves of polyethylenes prepared by CatA in toluene solvent (Entries 5, 6, 7 in Table 1)



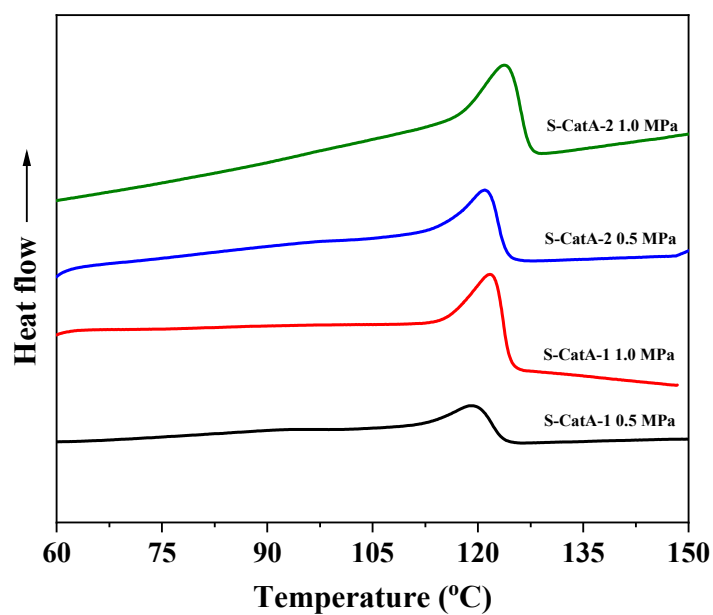
FigureS6 DSC curves of polyethylenes prepared by CatA in n-hexane solvent (Entries 1, 2, 3 in Table 1)



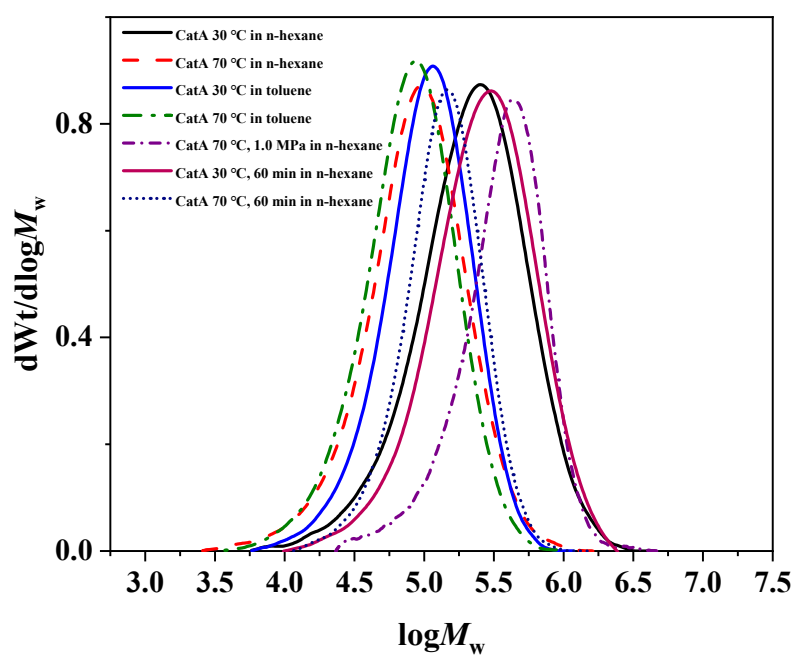
FigureS7 DSC curves of polyethylenes prepared by **CatA** in n-hexane solvent at different conditions (Entries 4, 8, 9 in Table 1)



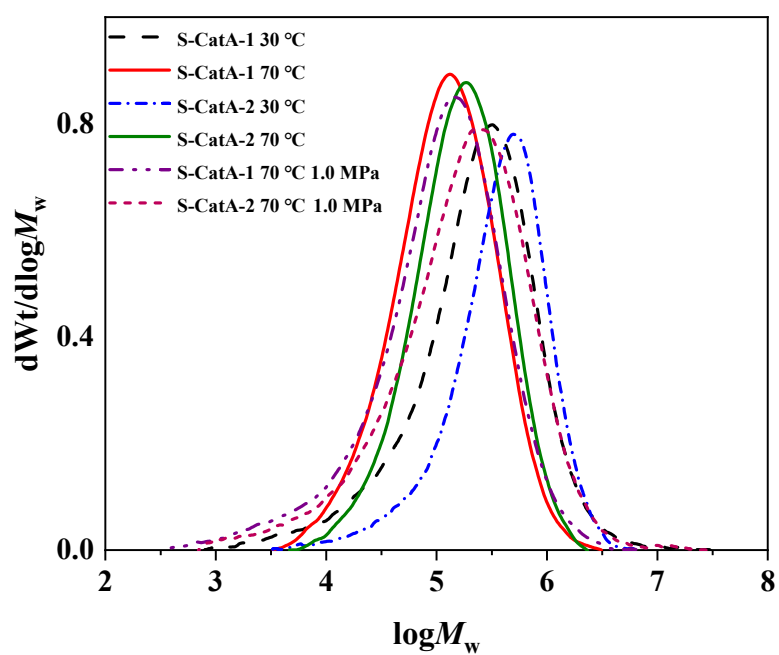
FigureS8 DSC curves of polyethylenes prepared with heterogeneous catalysts at different temperatures (Entries 1, 2, 3, 5, 6, 7 in Table 3)



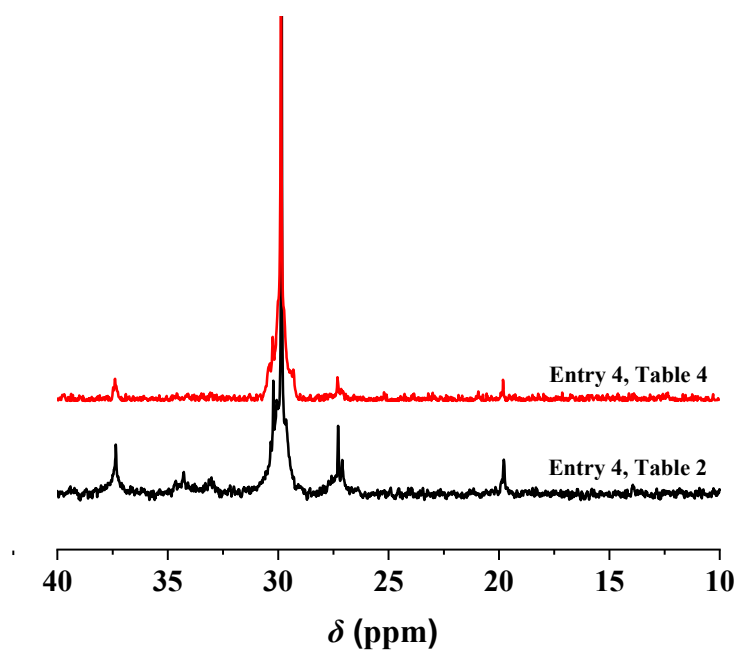
FigureS9 DSC curves of polyethylenes prepared S-CatA-1/2 at different pressures at 70 °C (Entries 3, 4, 7, 9 in Table 3)



FigureS10 GPC curves of polyethylenes prepared by CatA at different conditions (Entries 1, 3, 4, 5, 7, 8, 10 in Table 1)



FigureS11 GPC curves of polyethylenes prepared by S-CatA-1/2 catalysts (Entries 1, 3, 4, 5, 7, 9 in Table 3)



FigureS12 ^{13}C NMR spectra of polyethylenes prepared by CatA, S-CatA-1 at 70 °C, 1.0 MPa (Entry 4 in Table 1, Entry 4 in Table 3)