Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information

Catalytic Synthesis of Polyethylene-*block*-Polynorbornene Copolymers Using a Living Polymerization Nickel Catalyst

Haiyang Gao*, Yong Liu, Guiliang Li, Zefan Xiao, Guodong Liang, and Qing Wu

PCFM Lab, DSAPM Lab, School of Chemistry and Chemical Engineering, Sun Yat-Sen University, Guangzhou 510275, China.

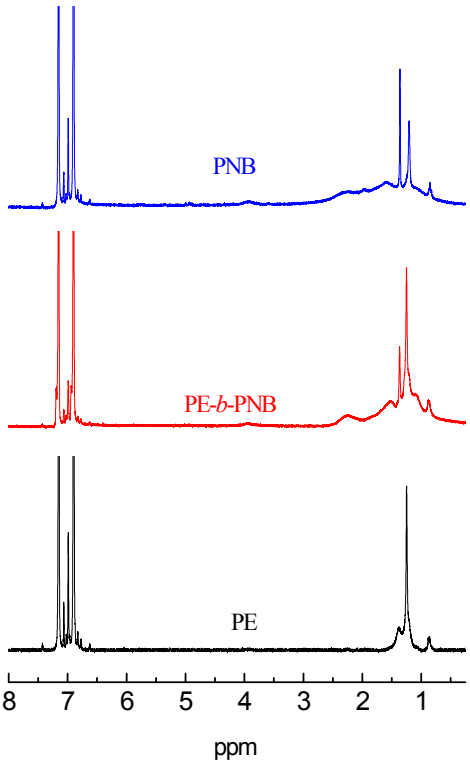

Figure S1 ^{1}H NMR spectra of the PNB, PE, and PE-*b*-PNB block copolymer.

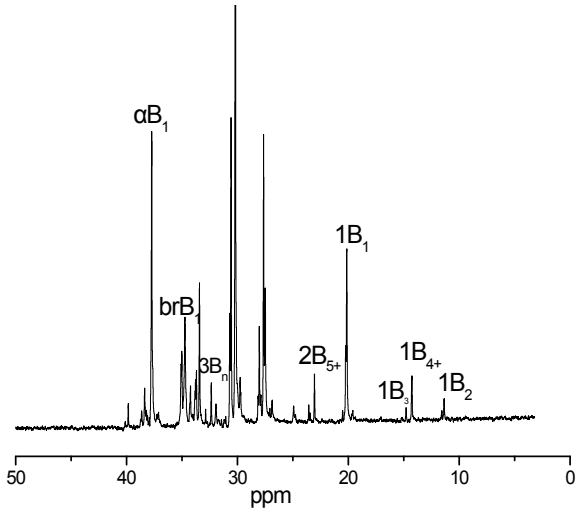

Figure S2 ^{13}C NMR spectrum of the PE produced by **1**/MMAO.

Table S1 Branching distribution of the PE produced by **1**/MMAO.[1,2]

			Branched chain (/1000C)						Branches
run	catalyst	T(°C)	Me	Et	Pr	Bu	Pe	Lg	(/1000C)
8	**1**/MMAO	-20	25	3	1	4	0	6	39

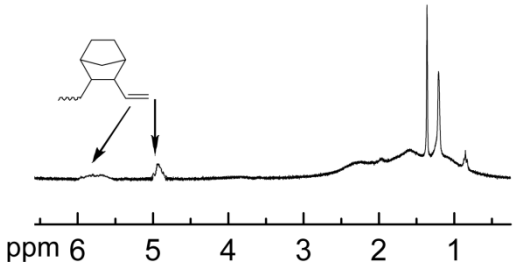

Figure S3 ^{1}H NMR spectrum of the polymer product generated from norbornene polymerization using nickel catalyst **1** in the presence of ethylene

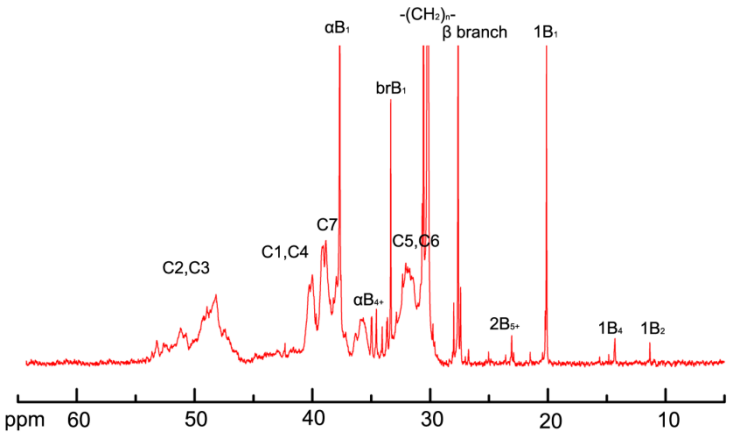

Figure S4 ^{13}C NMR spectrum of the PE-*b*-PNB produced by **1**/MMAO.

Table S2 Assignments of the peaks in the ^{13}C NMR spectrum of the PE-*b*-PNB.

Assignment	Chem. Shift (ppm)
$1B_2$	11.2
$1B_{4+}$	14.2
$1B_1$	20.0
$2B_{5+}$	22.9
β branch	27.40-27.8
-(CH_2)-	30.0
C5,C6 of PNB	29.4-33.0
brB_1	33.2
αB_{4+}	34.4
C7 of PNB	35.5~38.5
αB_1	37.5
C1,C4 of PNB	38.8~42.8
C2,C3 of PNB	46.1~54.0

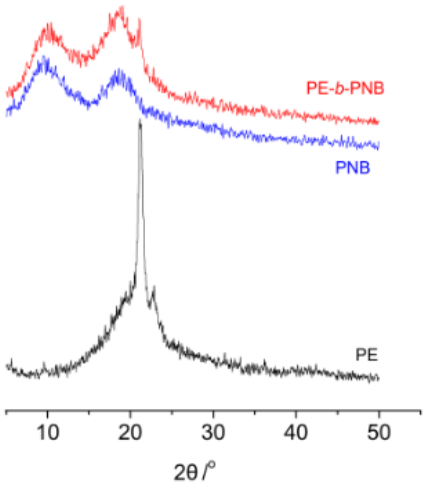

Figure S5 WAXD curves of the PNB, PE, and PE-*b*-PNB block copolymer.

References:

(1) L. K. Johnson, C. M. Killian, M. Brookhart, *J. Am. Chem. Soc.* **1995**, *117*, 6414-6415.
(2) Galland, G. B.; de Souza, R. F.; Mauler, R. S.; Nunes, F. F. *Macromolecules* **1999**, *32*, 1620-1625.