Supporting Information

Comparative Study on Kinetics of Ethylene and Propylene Polymerizations with Supported Ziegler-Natta Catalyst Containing Internal Donor: Catalyst Fragmentation Promoted by Polymer Crystalline Lamellae

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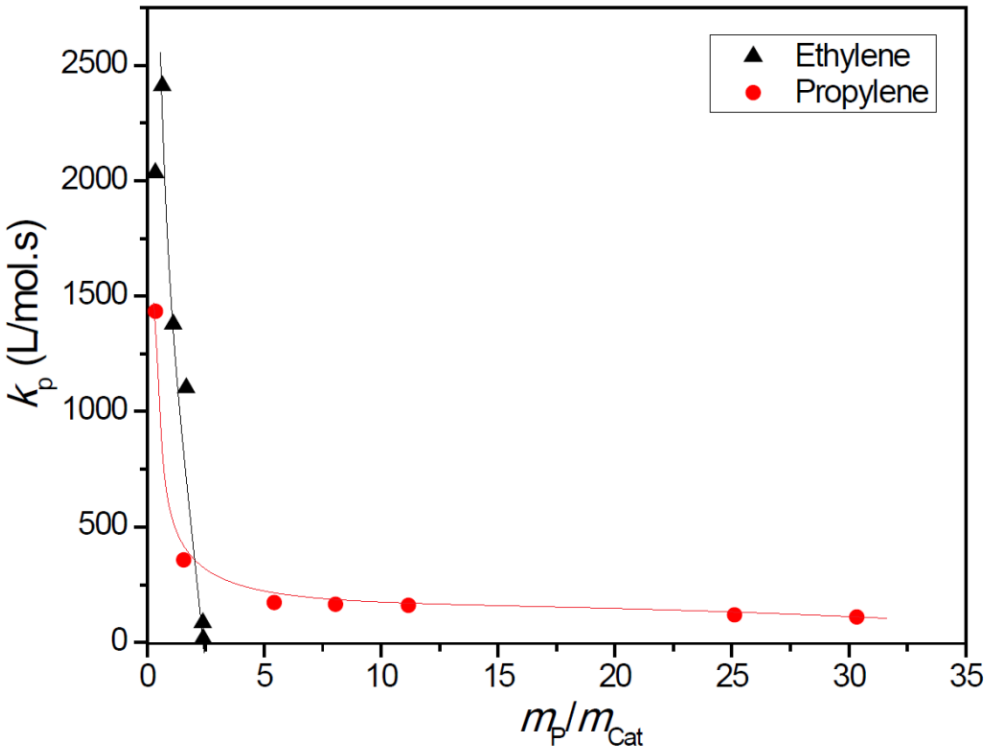


Figure S1. Changes of apparent rate constant with polymer/catalyst mass ratio.

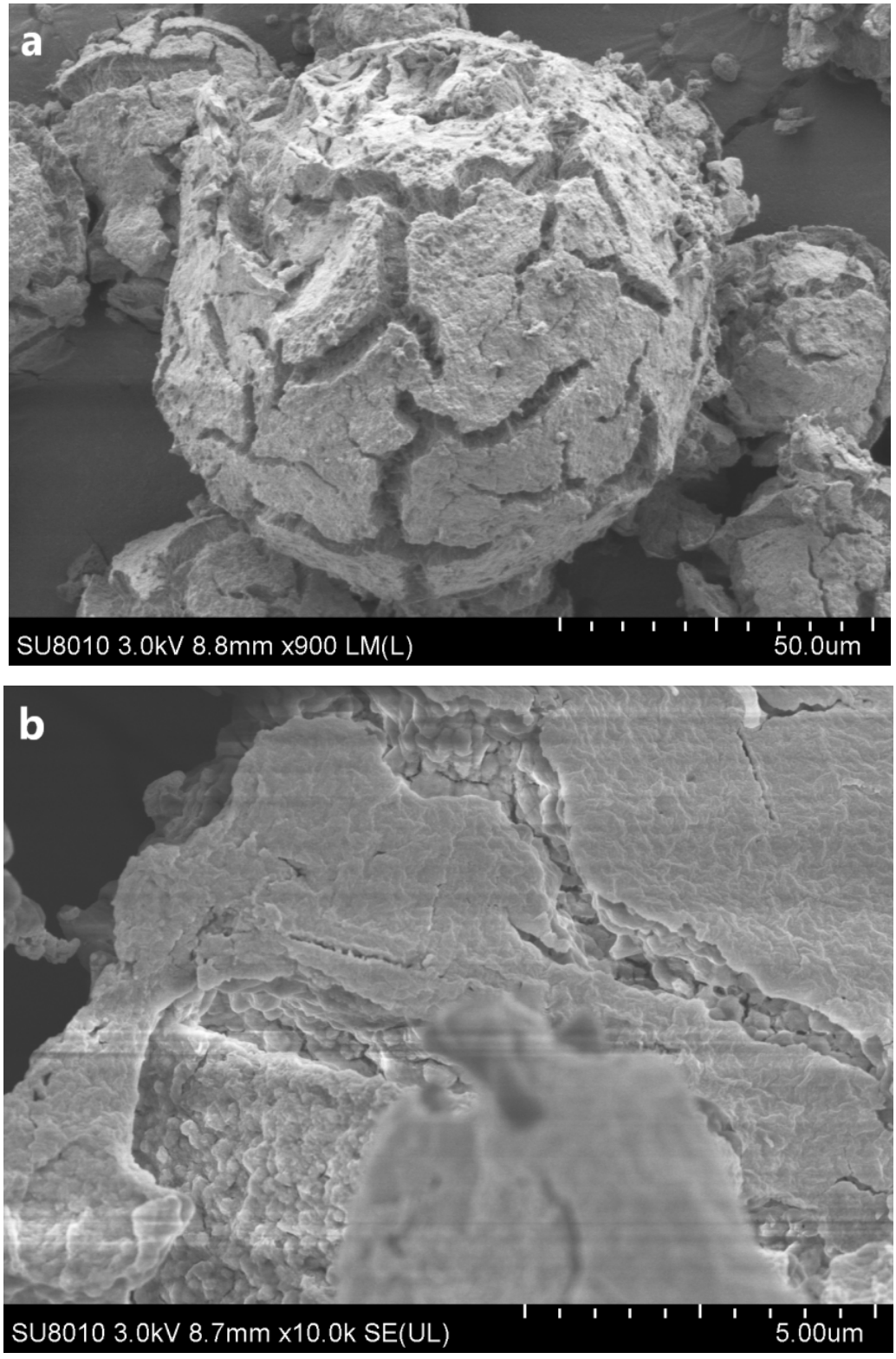


Figure S2. SEM pictures of catalyst particles.

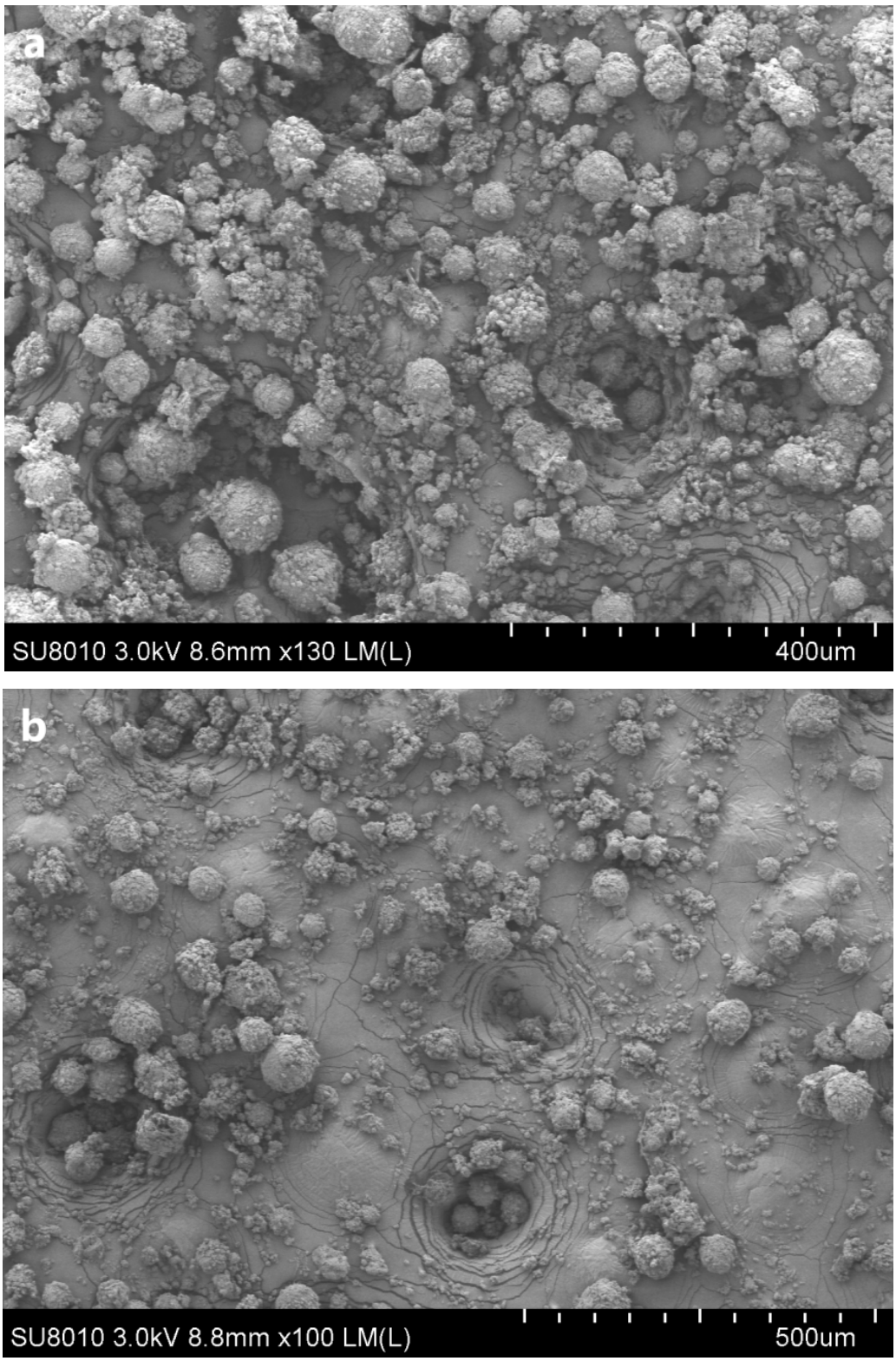
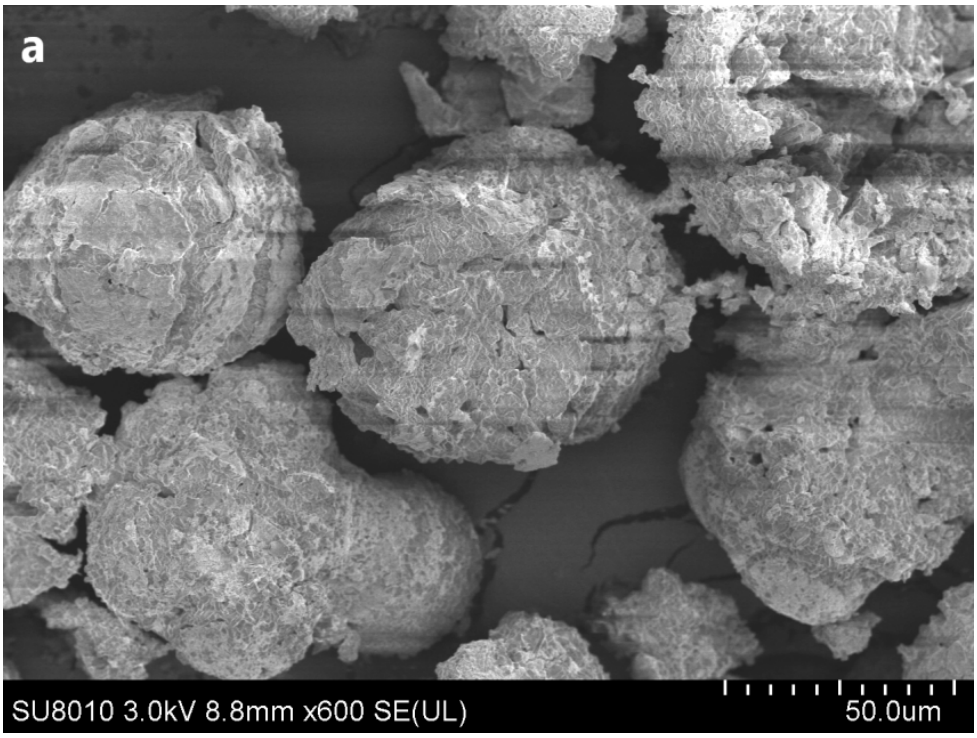
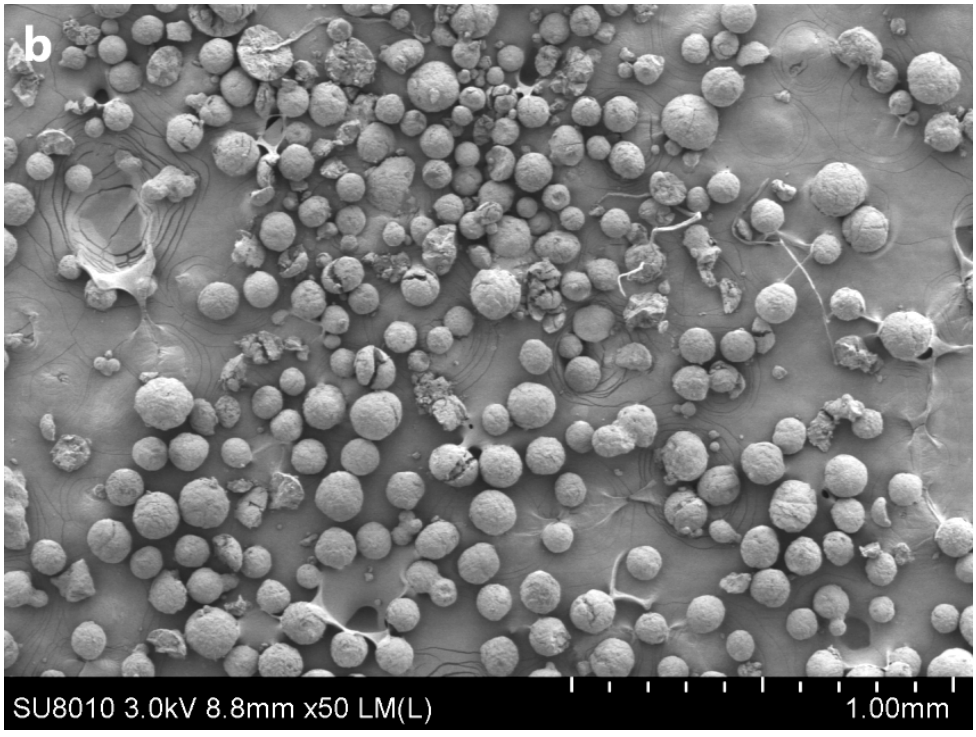


Figure S3. SEM pictures of polyethylene/catalyst particles at different polymerization times: (a) 120 s; (b) 180 s (samples E3 and E4 in Table 1).


a
SU8010 3.0kV 8.8mm x600 SE(UL)
50.0um


b
SU8010 3.0kV 8.8mm x50 LM(L)
1.00mm

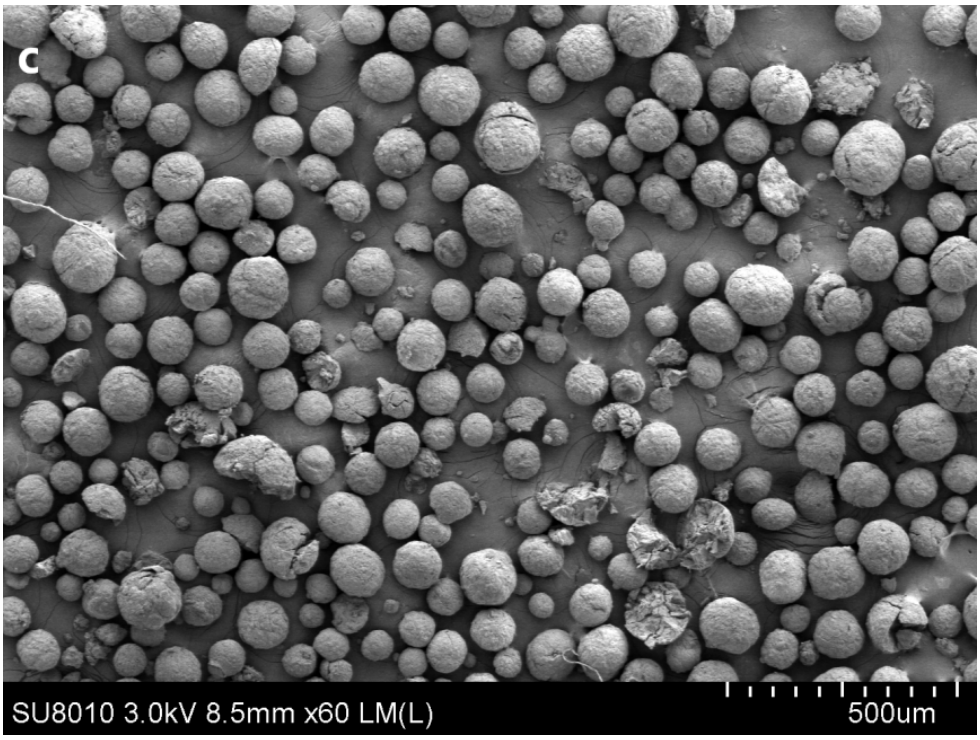


Figure S4. SEM pictures of polypropylene/catalyst particles at different polymerization times: (a) 30 s; (b) 120 s; (b) 180 s (samples P1, P3 and P4 in Table 1).

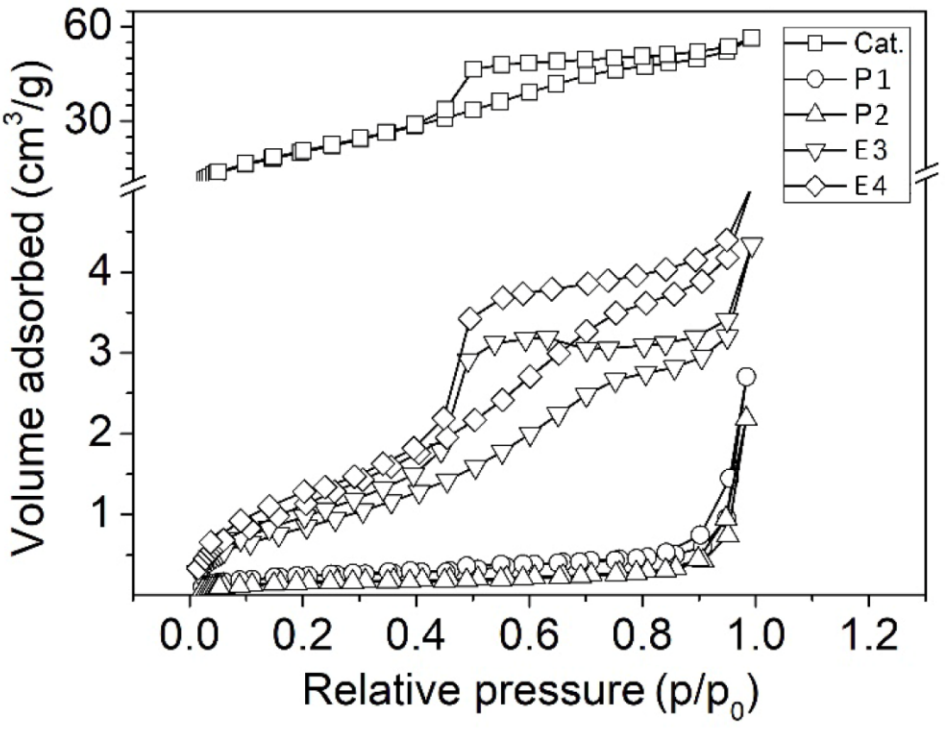


Figure S5. Nitrogen adsorption–desorption isotherms of polymer/catalyst particles.

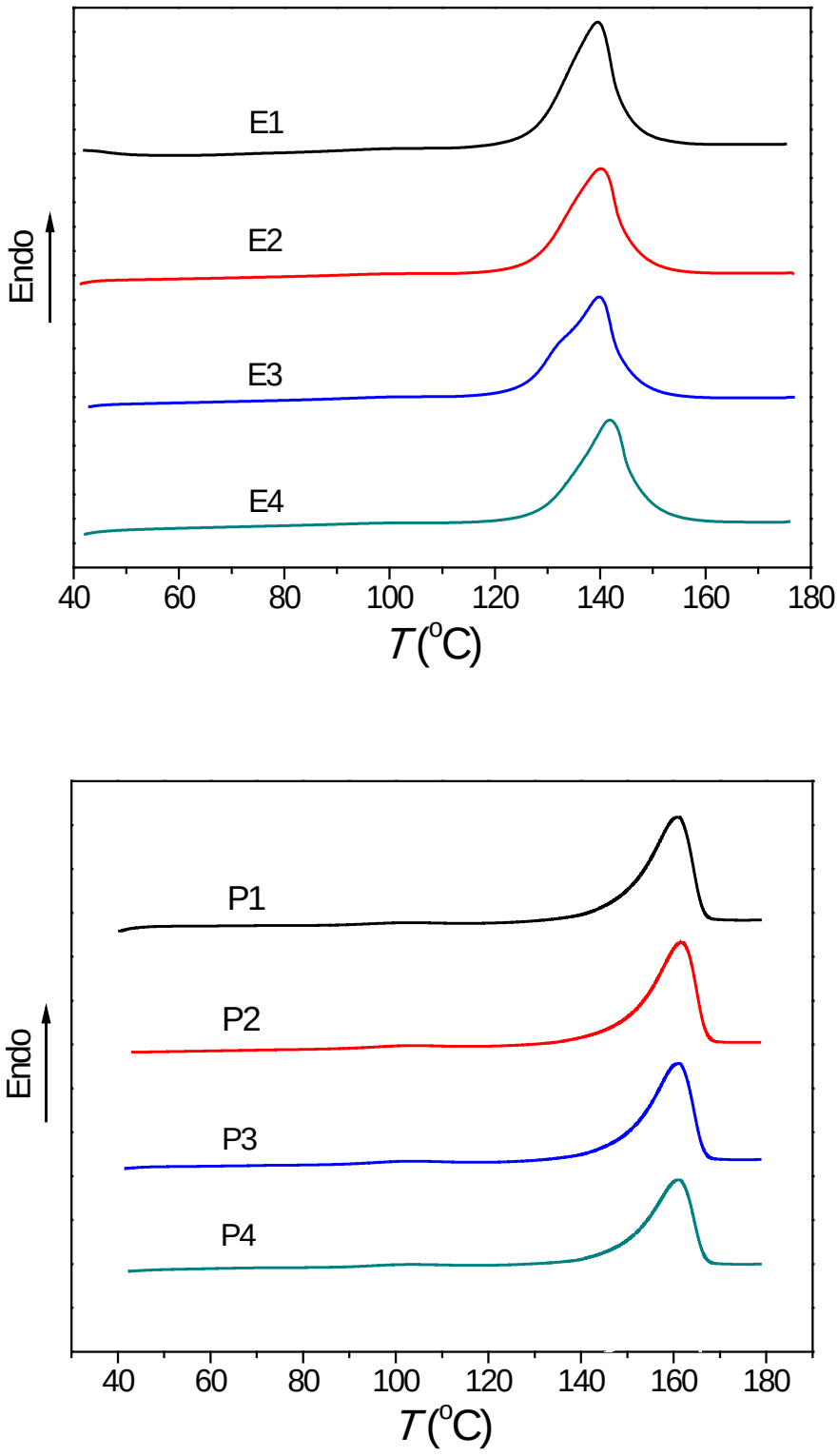


Figure S6. DSC curves of PE and PP samples (the first heating scan).

Table S1. Thermal Properties of Polymer Samples Based on the Second Heating Scan.

Run	Polymer	T_m [a] (°C)	ΔH_f [b] (J/g)	X_c [c] (%)
E1	PE	134.1	179.0	62.2
E2		134.9	164.3	57.0
E3		133.2	163.9	56.9
E4		133.8	142.0	49.3
P1	PP	159.5	78.5	51.0
P2		160.3	80.2	52.1
P3		158.8	78.3	50.8
P4		158.6	70.6	45.8

a. Melting temperature; b. Melting enthalpy; c. Degree of crystallization calculated based on 100% defectfree polyethylene crystal with a 288 J/g fusion heat and polypropylene crystal with a 154 J/g fusion heat.