

Supporting Information for

Introduction of Titanium Species into Fluorine Modified SiO₂-Supported Cr-V Bimetallic Catalyst for Ethylene Polymerization and Ethylene/1-Hexene Copolymerization

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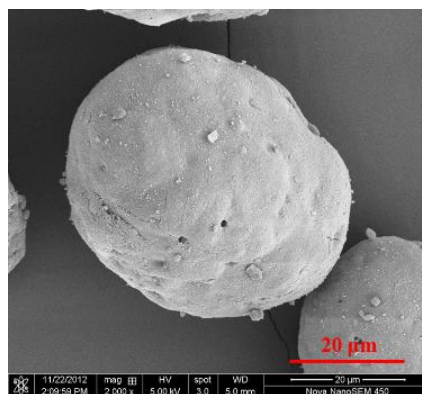
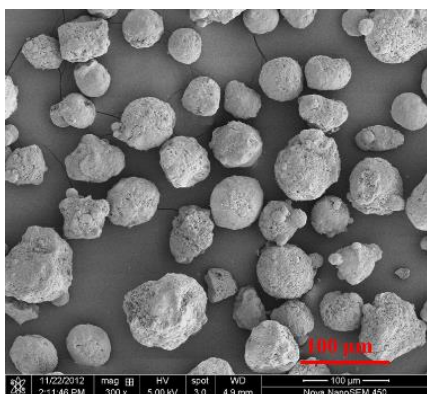
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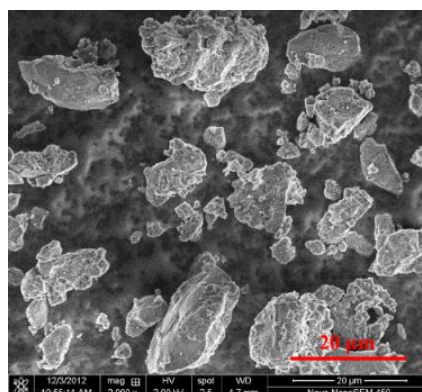
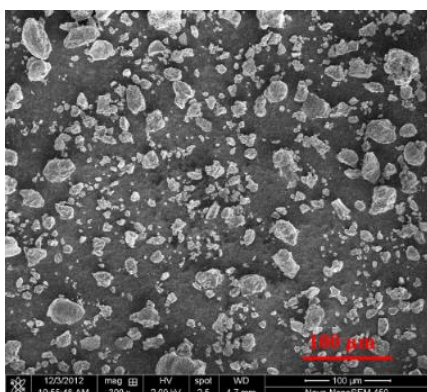
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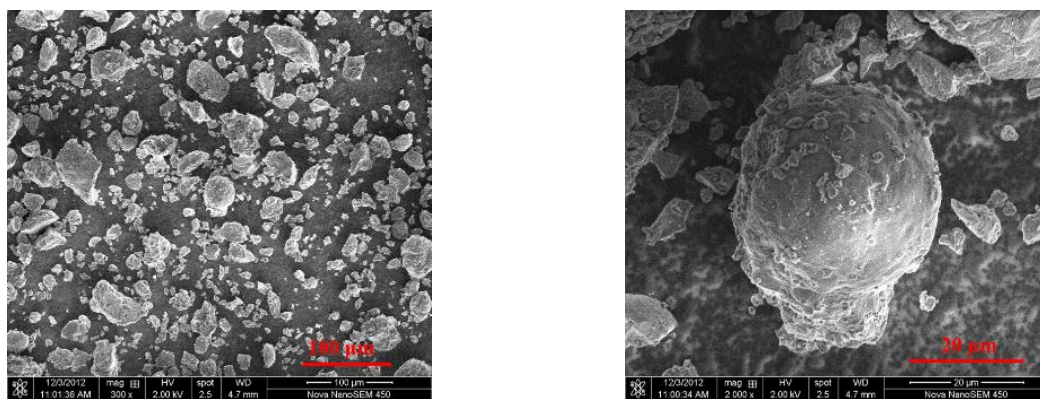
1. SEM images for silica support and different catalysts



(A) 955 silica



(B) (Cr-V-F)⁵⁰⁰ catalyst



(C) (Cr-V-F/3Ti)⁶⁰⁰ catalyst

Figure S1. SEM images for (A) Silica support, (B) (Cr-V-F)⁵⁰⁰ catalyst, and (C) (Cr-V-F/3Ti)⁶⁰⁰ catalyst.

2. Effect of the polymerization temperatures on the properties of polymers

Table S1. Effect of the polymerization temperatures on the properties of polymers.

Catalyst Sample	T [°C]	Activity [kgPE/mol _{Cr-h}]	T _m [°C]	Crystallinity [%]	MW [×10 ⁵ g/mol]	MWD
(Cr-V-F/3Ti) ⁶⁰⁰	45	280.8	130.9	51.1	9.9	53.7
	65	238.6	131.6	56.9	9.3	38.8
	85	103.8	131.4	54.3	8.9	39.6
(Cr-V-F/3Ti) ⁵⁰⁰	45	190.2	131.7	58.6	9.5	27.4
	65	241.3	130.9	59.1	9.6	40.2
	85	114.0	131.5	64.2	9.2	46.3
(Cr-V-F/6Ti) ⁵⁰⁰	45	230.4	131.7	57.1	12.4	33.1
	65	160.2	131.2	58.0	9.3	43.3
	85	105.6	131.7	60.2	8.7	39.2

Conditions: catalyst 160 mg, ethylene 0.15 MPa, *n*-heptane 70 mL, TIBA as cocatalyst, Al/Cr=2.5, 1 h.

3. High temperature ¹³C NMR spectra of the copolymers

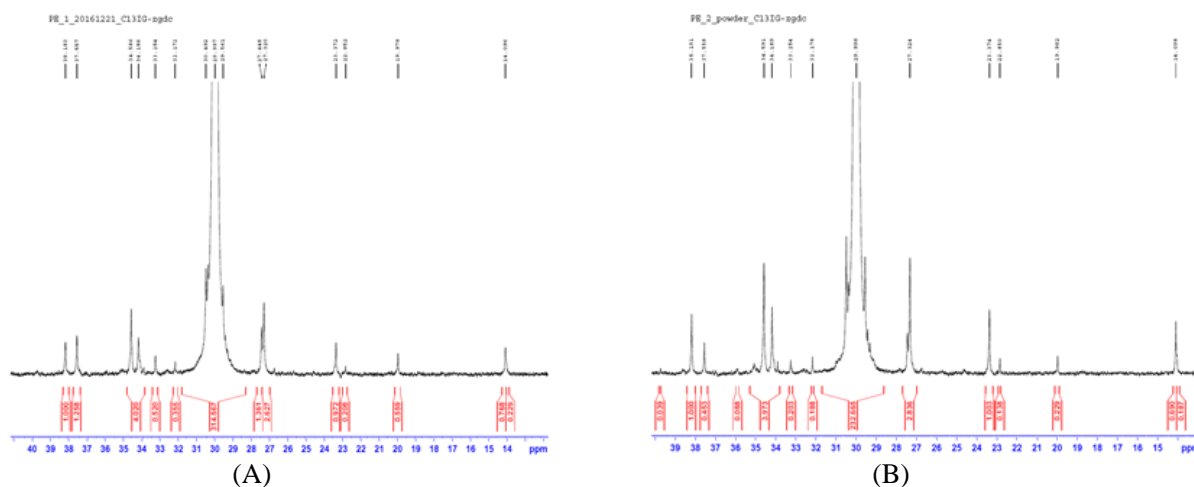


Figure S2. HT-¹³C NMR spectra of the copolymers PE-1 and PE-2 obtained from different catalysts: (A) (Cr-V-F)⁶⁰⁰ and (B) (Cr-V-F/3Ti)⁶⁰⁰.

4. Weight distribution of fractions obtained from (A) PE-1 and (B) PE-2

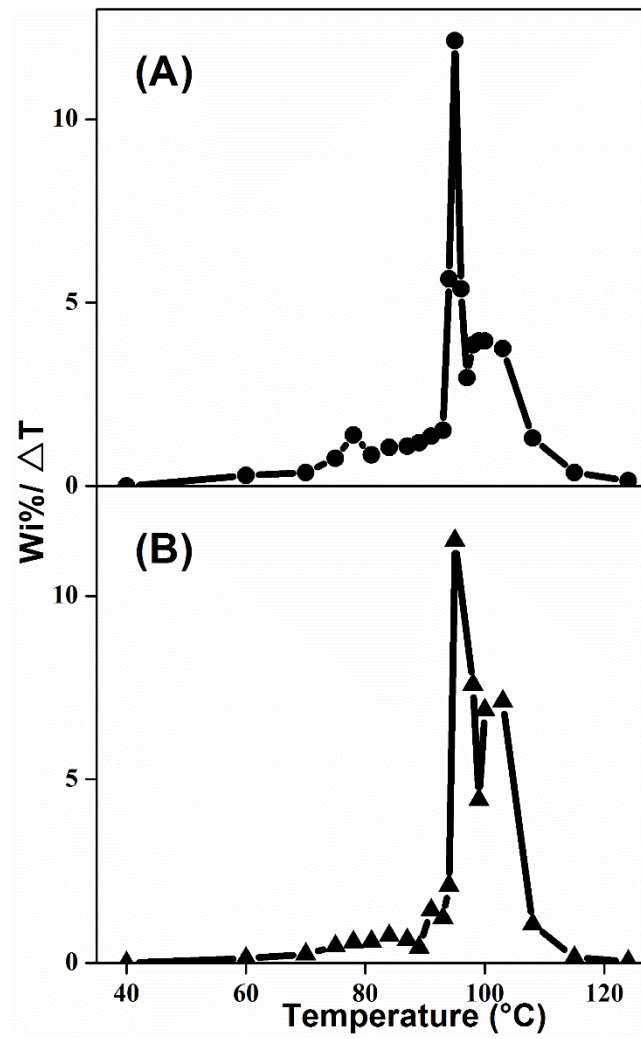


Figure S3. Weight distribution of fractions obtained from (A) PE-1 and (B) PE-2.