Supporting Information for

Tuning Structural Parameters of Polyethylene Brushes on Silica Nanoparticles in Surface-Initiated Ethylene "Living" Polymerization and Effects on Silica Dispersion in a Polyolefin Matrix

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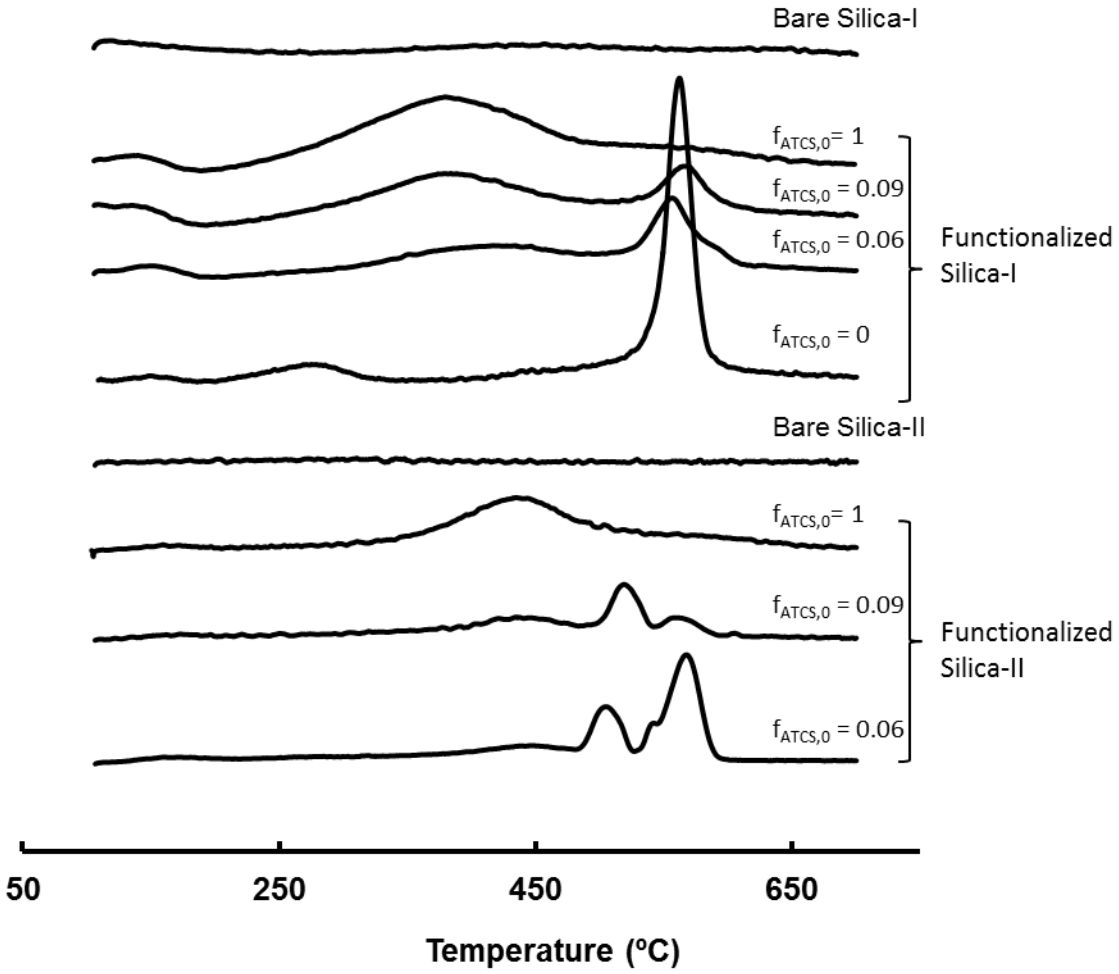

Figure S1. Derivative thermogravimetric curves of bare silicas and surface-functionalized silicas.

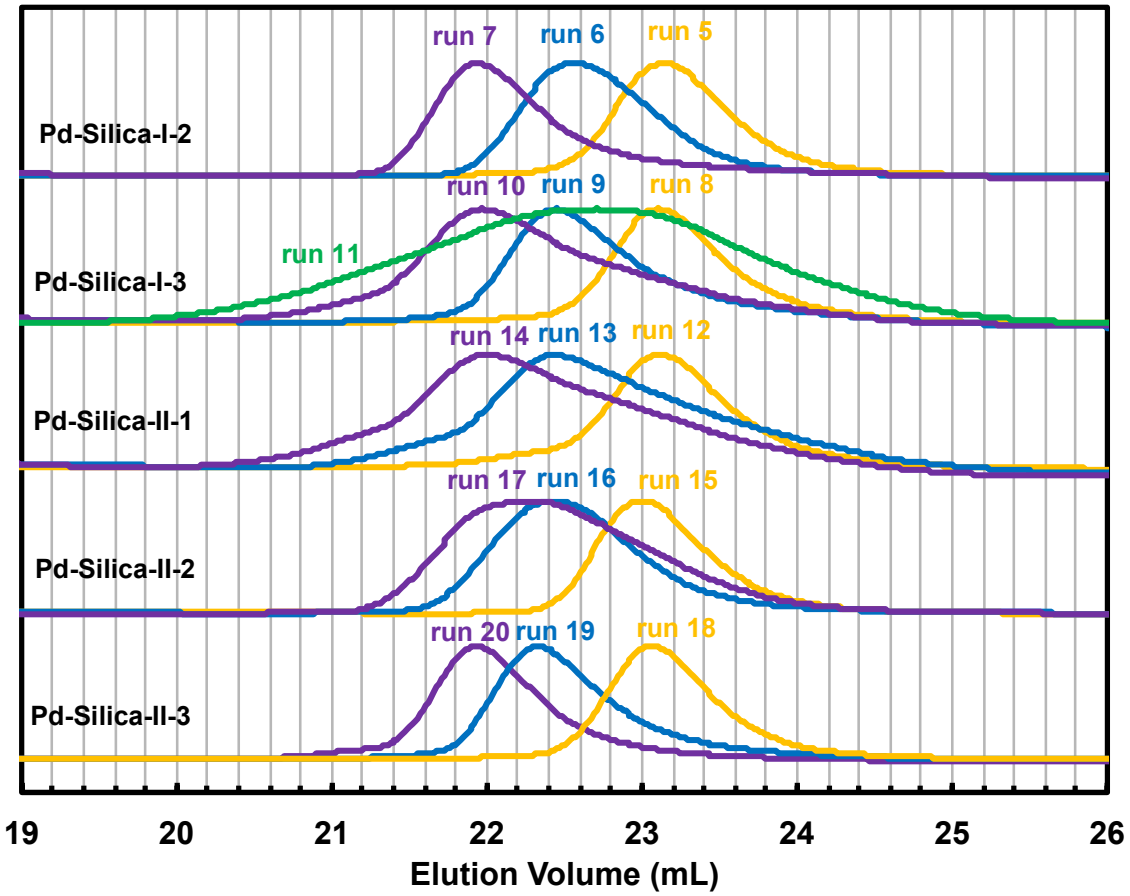

Figure S2. GPC elution curves (recorded from DRI detector) of cleaved PE brushes from PE-grafted silicas obtained in runs 5–18 with the various catalyst-immobilized silicas. GPC eluent: THF at 1 mL/min and at 33 °C.

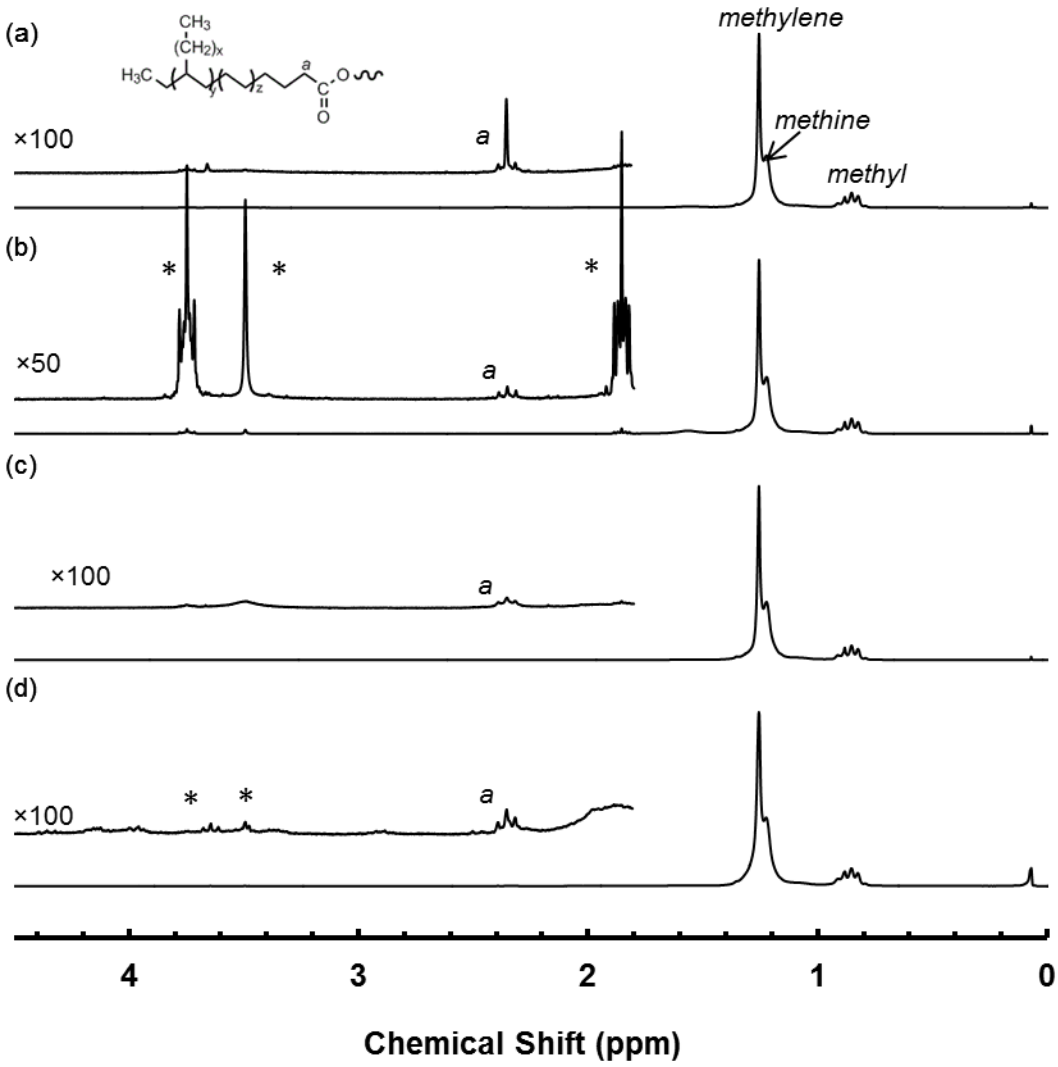

Figure S3. ^{1}H nuclear magnetic resonance spectra of cleaved polyethylene brushes from run 1 synthesized with Pd-Silica-I-1 (a), from run 8 synthesized with Pd-Silica-I-3 (b), from run 12 synthesized with Pd-Silica-II-1 (c), from run 18 synthesized with Pd-Silica-II-3. These runs were all carried out at 27 atm and 5 °C (see Table 2). The signals marked with an asterisk (*) result from trace solvent residue (methanol or THF) present in the cleaved brushes.

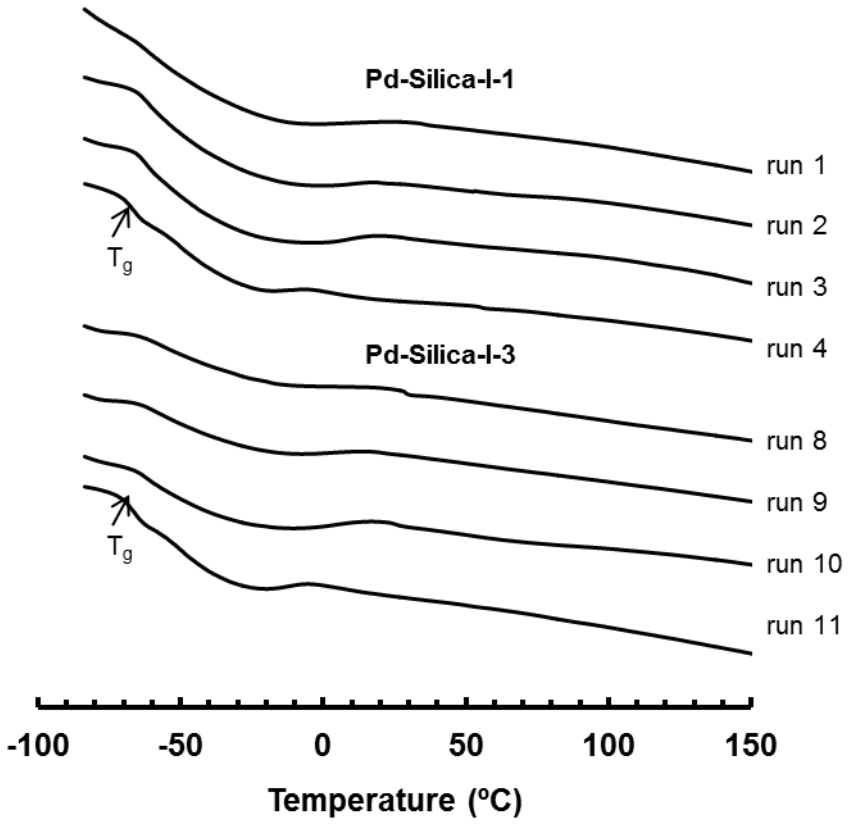

Figure S4. DSC thermograms of the PE-grafted silicas synthesized with Pd-Silica-I-1 and Pd-Silica-I-3, respectively.

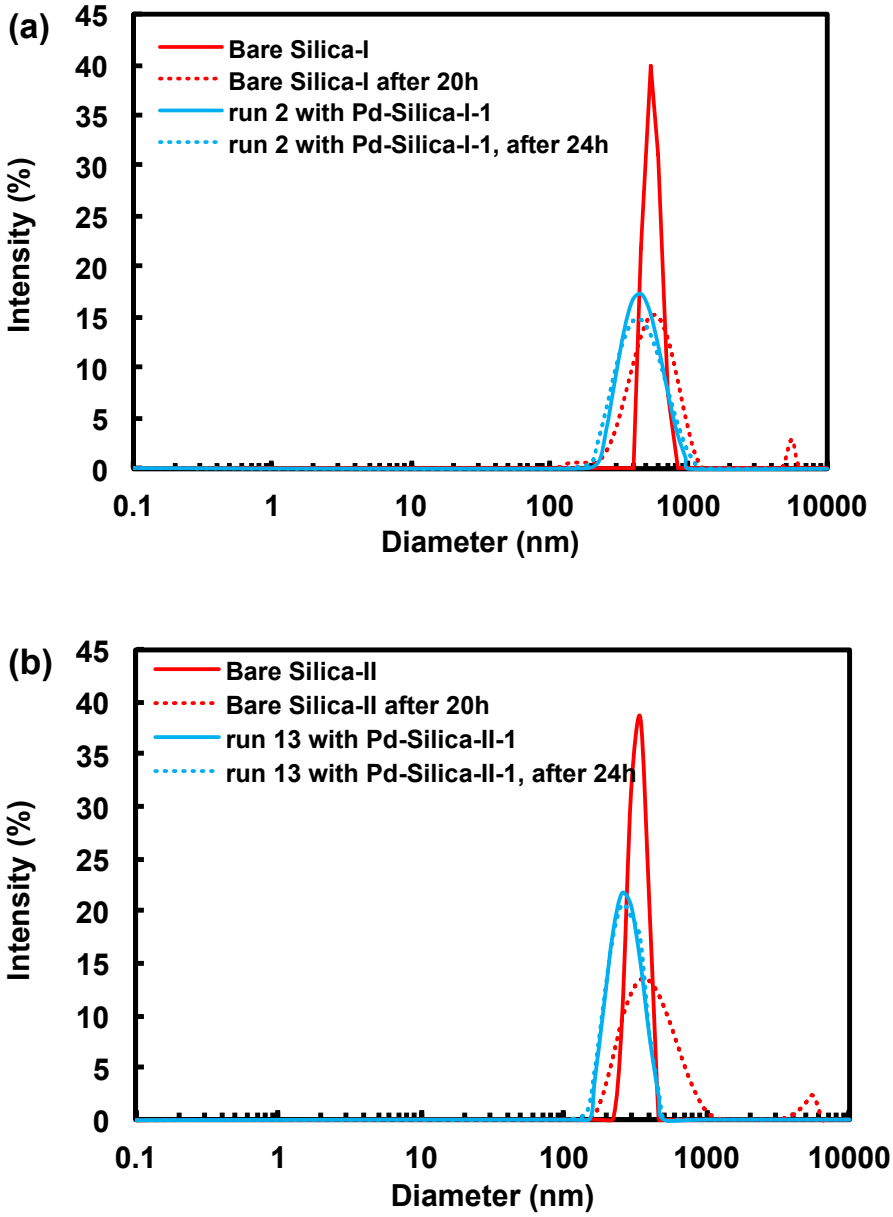

Figure S5. Particle size distribution of bare silicas and PE-grafted silicas determined from their dispersions with DLS at room temperature. The dispersions of bare silicas were prepared in THF and those of PE-grafted silicas were prepared in toluene.

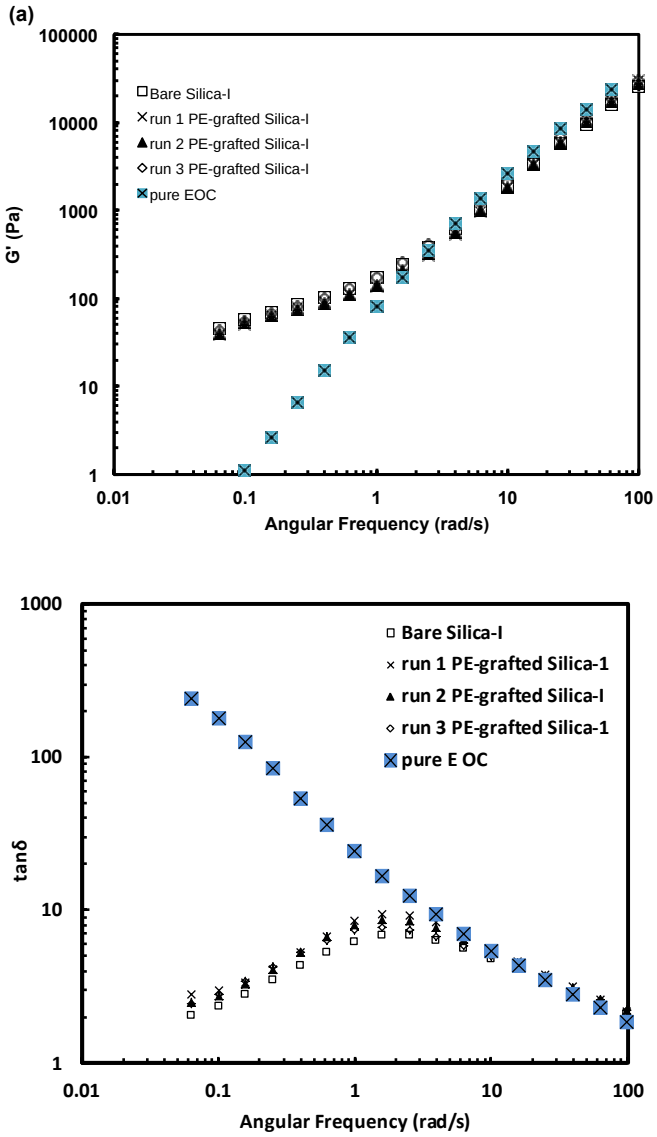

Figure S6. Representative viscoelastic properties (at 190 °C) for the EOC composites compounded with PE-grafted Silica-I samples synthesized in runs 1–3 as fillers: (a) storage modulus, G'; (b) loss tangent, tanδ. The curves for pure EOC and the composite compounded with bare Silica-I are also included. The filler loading is designed with the dry bare silica content in the composites being 7 wt%.