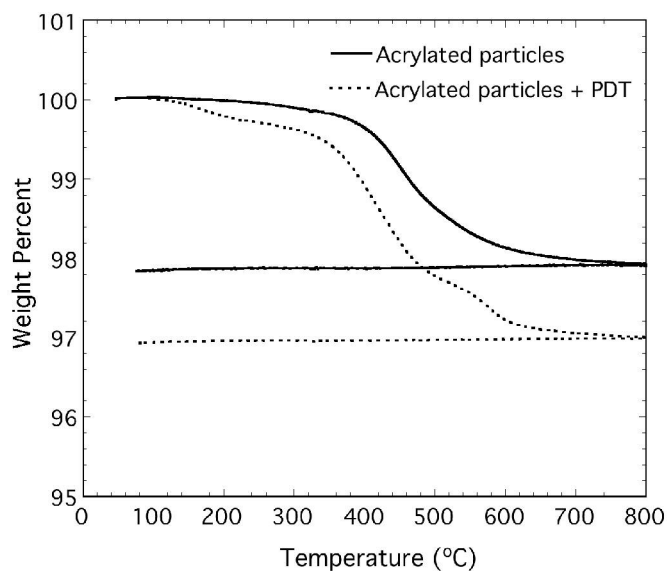


## Supporting Information

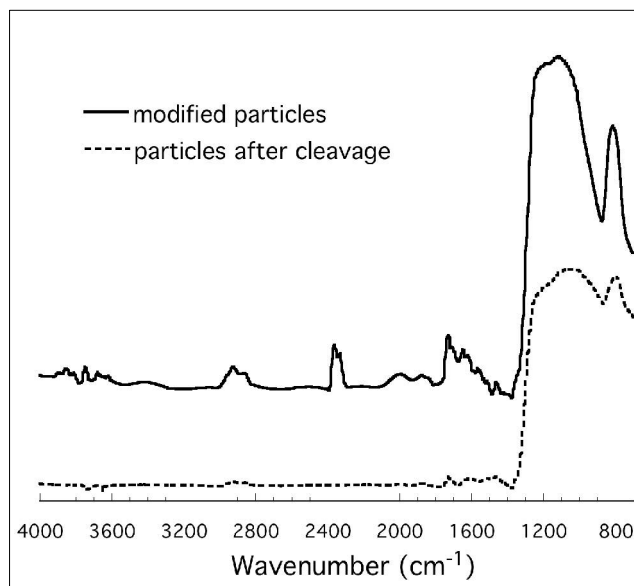
### Synthesis, Characterization and Cleavage of Surface-bound Linear Polymers

#### Formed Using Thiol-ene Photopolymerizations

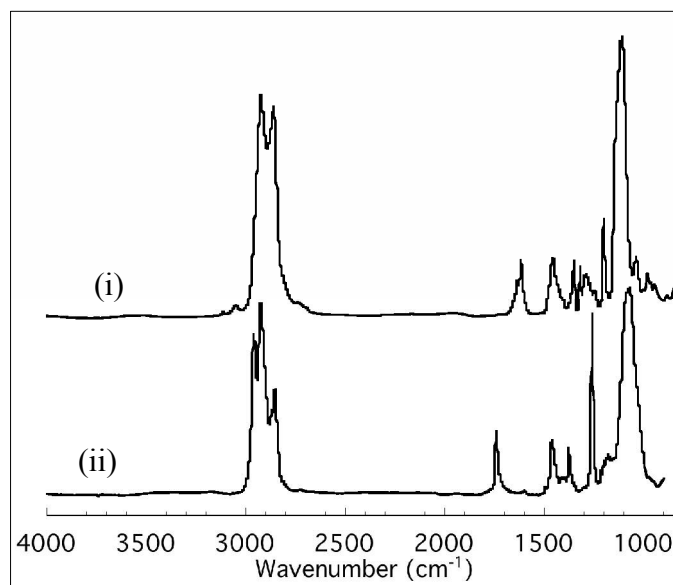
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**Figure S1.** TGA weight loss curves of particles modified with acrylated trichlorosilane and with propane dithiol. Particles were heated from 50°C to 800°C at a rate of 10°C/min (top part of each curve), held at 800°C for 20 minutes and cooled down to 50°C at a rate of 20°C/min (bottom part of the curve).



**Figure S2.** IR spectra of particles modified with thiol-ene polymer before and after cleavage. Silica nanoparticles were modified with hexane dithiol and triethylene glycol divinyl ether, and modified particles were cleaved by refluxing in chloroform in the presence of p-toluenesulfonic acid.



**Figure S3.** IR spectra of (i) unattached polymer and (ii) grafted, cleaved polymer formed by polymerizing hexanedithiol and triethylene glycol divinyl ether in the ratio of 0.77:1. HDT and DVE3 were polymerized with 0.1% DMPA by exposing to UV light (365 nm, 15 mW/cm<sup>2</sup>) in the presence of 5 wt% thiolated silica nanoparticles. The non-bonded polymer was separated from particles by centrifugation, and the grafted polymer was cleaved from the surface using acid hydrolysis.