

Abstract Submitted
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Confinement **Effects** **on**
Polymer Morphology and Properties¹ SPIROS H. ANASTASIADIS, KIRIAKI
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— The behavior of polymers restricted in space or to surfaces/interfaces can be
very different from that in the bulk. In this work, we investigate the morphology
and thermal properties of poly(ethylene oxide), PEO, in nanohybrids containing
two kinds of silica nanoparticles of largely different sizes in an attempt to bridge
the case of severely confined polymers within the galleries of layered silicates with
that of polymer-single nanoparticle nanocomposites. Hybrids with different ratio
between the two silica nanoparticles were prepared in order to increase the level
of confinement. The good dispersion of the nanoparticles was verified by trans-
mission electron microscopy whereas the morphology and crystallization behavior
were investigated with X-ray diffraction, Fourier transform infrared spectroscopy,
differential scanning calorimetry and polarised optical microscopy. The polymer be-
havior in the three component systems is found indeed intermediate between that of
PEO/montmorillonite and that of PEO/silica with a single-size particles. Moreover,
the behavior can be tuned by varying the ratio of the large to the small nanoparticles.

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