Supporting Information

Transmission electron microscopy of spun-cast thin films of the block and graft copolymers synthesized during the course of this study, as well as their blends with PMMA, reveals that (*i*) the neat copolymers are microphase-separated and (*ii*) their blends exhibit copolymer micelles at the concentrations examined. The images shown in Fig. 1 have been acquired from the PMMA-*g*-PDMS graft copolymer and a blend with 1 wt% copolymer. Figures 1a and 1b are structure-sensitive images wherein the noncarbonaceous PDMS moieties appear light. Images such as these indicate that the size distribution of copolymer micelles in the neat copolymer is relatively broad. Matched zero-loss and structure-sensitive images of the PMMA/copolymer blend are displayed for comparison in Figs. 1c and 1d, respectively. Micelles, as well as large holes (generated most likely during solvent removal), are evident in these images. Note the existence of fibrils remaining within the holes. This feature, attributed to cavitation of the soft PDMS constituent within the blend, is also observed in the corresponding PMMA/PMMA-*g*-PDMS foams (*cf*. Fig. 11b in the text). Analogous images of the PMMA-*b*-PFOMA(1) diblock copolymer and its blend with PMMA are provided in Fig. 2. The zero-loss image presented in Fig. 2a confirms that the copolymer is microphase-separated (but not ordered), and the matched zero-loss and structure-sensitive images in Figs. 2b and 2c, respectively, show that the copolymer organizes into micelles within a 99/1 w/w PMMA/PMMA-*b*-PFOMA(1) blend. The presence of holes in this blend likewise suggests limited bubble formation during solvent removal.

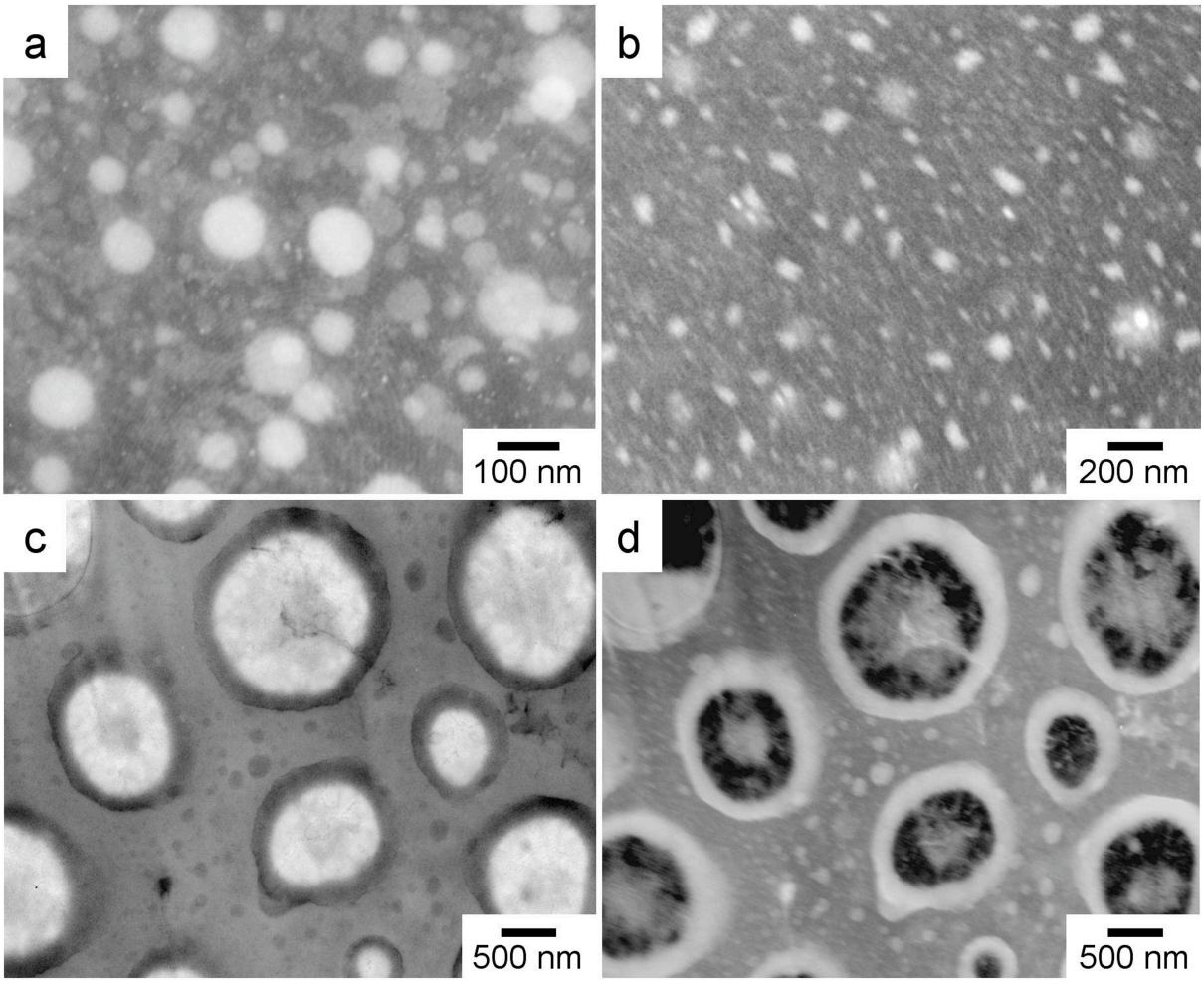

Figure 1. TEM images of the neat PMMA-*g*-PDMS graft copolymer (a,b) and a 99/1 w/w PMMA/PMMA-*g*-PDMS blend (c,d). The images displayed in (a) and (b) are collected at different magnifications and an electron energy-loss (ΔE) setting of 200 eV so that Si-containing copolymer-rich features appear light, whereas the images presented (c) and (d) are obtained from the same specimen region at different ΔE values (0 and 150 eV, respectively) to highlight copolymer-rich features, which appear dark in (c) and light in (d). Note the residual copolymer-rich material within the pores in (c) and (d).

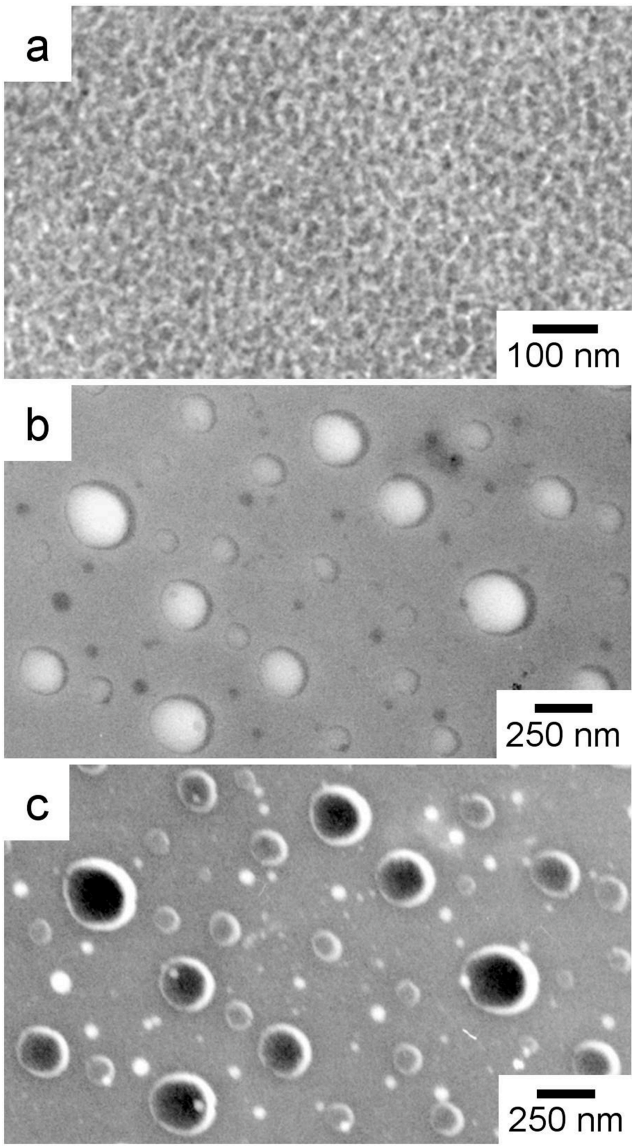

Figure 2. TEM images of the neat PMMA-*b*-PFOMA(1) diblock copolymer (a) and a 99/1 w/w PMMA/PMMA-*b*-PFOMA(1) blend (b,c). The image displayed in (a) has been acquired at a ΔE setting of 0 eV so that the Si-containing microphase appears dark, whereas the images presented (b) and (c) are obtained from the same specimen region at different ΔE values (0 and 150 eV, respectively) to highlight copolymer-rich features, which appear dark in (b) and light in (c).