

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

The Interface between Two Incompatible Polymers in Density Fluctuating Supercritical Carbon Dioxide¹ J.S. KOO, T. KOGA, M. RAFAILOVICH, J. SOKOLOV, SUNY at Stony Brook — The X-ray reflectivity was used to investigate an effect of CO₂ sorption on interface between two immiscible polymers, polystyrene (PS) and poly(methylmethacrylate) (PMMA). Thin films of PS and PMMA were spun cast onto Si wafers and the interfacial width was measured as a function of the film thickness of both PS and PMMA layers. The samples were then exposed CO₂ gas at pressures and temperature corresponding to the density fluctuation ridge (1). The relative dilation of the two layers and the change in the interfacial width was then determined. The results showed that the dilation was nearly independent of the PMMA film thickness, and maximal at thickness less than 3R_g of the PS layers. The interfacial width in all cases was almost twice as large after exposure. These results will be interpreted in terms of the interfacial reduction induced by the CO₂ and capillary wave theory. (1) Koga, T. *et al. Phys. Rev. Lett.* **2002**, 89, 125506 ; Koga, T. *et al. Macromolecules* **2003**, 36, 5236.

¹Work supported in part by the NSF-MRSEC and the SRC-NYS consortium.

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Date submitted: 07 Dec 2005

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