The Interface between Two Incompatible Polymers in Density Fluctuating Supercritical Carbon Dioxide\textsuperscript{1} J.S. KOO, T. KOGA, M. RAFAILOVICH, J. SOKOLOV, SUNY at Stony Brook — The X-ray reflectivity was used to investigate an effect of CO\textsubscript{2} 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 CO\textsubscript{2} 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 3Rg 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 CO\textsubscript{2} and capillary wave theory. (1) Koga, T. et al. Phys. Rev. Lett. 2002, 89, 125506; Koga, T. et al. Macromolecules 2003, 36, 5236.

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