

Abstract Submitted
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Wetting induced instabilities in miscible polymer blends NIGEL CLARKE, Durham University, KATHERINE THOMAS, ULLRICH STEINER, ROSA POETES, University of Cambridge, MIHAI MORARIU, DSM — The behaviour of miscible blends of polystyrene (PS)/poly(vinyl methyl ether)(PVME) of varying compositions has been investigated [1] at temperatures where PS and PVME are miscible. The PVME is seen to enrich the polymer-air surface, forming a layer with a width that is comparable to the correlation length. Further heating close to the demixing temperature results in the formation of a capillary instabilities at the polymer surface exhibiting a spinodal-like pattern with a characteristic wavelength that depends on the blend composition. Formation of these instabilities is seen for all blend compositions. We propose that these wetting induced instabilities result from coupled height and composition fluctuations in the PVME enriched surface layer, driving the build-up of long wavelength fluctuations.

[1] Thomas, K.R.; Clarke, N.; Poetes, R.; Morariu, M.; Steiner, U.; *Soft Matter*, 6, 3517, 2010

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