

Abstract Submitted
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The effect of confinement on the structure of polystyrene melt films MRINMAY K. MUKHOPADHYAY, SUNIL K. SINHA, University of California, San Diego, CA 92093, LAURENCE B. LURIO, CURT DECARO, Northern Illinois University, DeKalb, IL 60115, ZHANG JIANG, MICHAEL SPRUNG, Advanced Photon Source, Argonne, IL 60439 — The structure factor of thin, Si supported, polystyrene films has been measured using grazing incidence wide angle diffuse x-ray scattering. Measurements were made as function of thickness and molecular weight from bulk-like films down to films of thickness of the polymer radius of gyration. A standing wave technique was employed to isolate the scattering component from the film interior. We observe a diffuse background and a liquid scattering ring whose intensity, for thick films, depends only on the magnitude of the scattering vector. In thinner films the intensity in the scattering ring is strongly concentrated along the surface normal direction. We interpret this peak as due to the chain-chain correlations and the concentration of scattering along the surface normal is indicating preferential stacking of the polymer chains parallel to the surface.

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