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Finite size effects on irreversible chain adsorption: a new probe of dynamics under nanoscale confinement SIMONE NAPOLITANO, CAROLINE HOUSMANS, MICHELE SFERRAZZA, Universite Libre de Bruxelles — We investigated the role of finite size effects on the dynamics of thin polymer films, analyzing the thickness dependence of the kinetics of irreversible chain adsorption of polystyrene onto silicon oxide. We identified two growth regimes - linear at short times and logarithmic at long times - separated by a molecular weight independent crossover time, and by a crossover thickness scaling as predicted by the reflected random walk. Film thickness did not affect the dynamics at short time scales, while in the logarithmic growth regime we observed slower adsorption for melts confined in slabs thinner than 4-6 R_g's. Given the correlation between the dynamics of the whole film and the structure of the adsorbed layer [1, 2], our findings suggest that the time necessary to equilibrate a polymer melt increases upon confinement. [1] Napolitano et al. Nature Comm., 2, 260 (2011) [2] Napolitano et al. EPJE 36, 61 (2013)

Simone Napolitano
Universite Libre de Bruxelles

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