Georgy Kitavtsev

Coarsening rates for the dynamics of polymer droplets in the presence of strong slippage

In this talk the coarsening dynamics of liquid polymer nanoscopic droplets will be described in the framework of the lubrication approximation for different slip regimes considered at the solid substrate. Starting from the work of Glasner and Witelski 03' it was shown that in the weak slip regime the coarsening rates obey the exponent $-2/5$. In our study we investigate rather the strong slip regime characterized by much larger slip lengths comparable with the averaged size of the film. The lubrication system for this case was derived recently in Mnch et al. 06'. Our further derivation of the corresponding reduced ODE models governing the coarsening dynamics of weakly interacting droplets in the strong slip regime allows for an effective investigation of the coarsening rates. We identify and subdivide here two main limiting coarsening regimes, namely the intermediate slip regime and the suspended free film regime. The first one reproduces the known exponent $-2/5$, whereas the second one shows quite different coarsening slopes and behavior completely dominated by migration of droplets.