527b Wetting Kinetics of Thin Films of Dilute Polymer Solutions

Parthasakha Neogi and S. Saritha

WETTING KINETICS OF A THIN FILM OF DILUTE POLYMER SOLUTION

Coating surfaces with very thin polymer films requires the knowledge of wetting kinetics. Previous experiments have shown that drops containing polymer solutions spread on glass surfaces with rates appropriate for a wetting liquid, but stop abruptly. Calculations are provided here for the spreading of a thin film pinned to a slot. The film contains a dissolved polymer and the solvent is wetting and does not evaporate. The driving forces are the Laplace pressure and the disjoining pressure due to the presence of polymers. The latter is due in parts to the entropic effect and in parts due to steric exclusion. It will be shown that if the uncertainty in linear measurements is significant, as in microscopy, then the experimental observations are readily explained.