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## A study of the interface kinetics affecting cylindrical phase separation in PS-b-PMMA copolymer thin films

*Wednesday, 6 May 2015 13:30 (1h 30m)*

In this study a controlled examination was undertaken in order to confirm and compare the parameters affecting PS-b-PMMA copolymer thin film nano-masks. A PS-b-PMMA copolymer with a molecular weight of  $67\,100\text{ g}\cdot\text{mol}^{-1}$  (70:30) was used to produce thin film nano-masks on treated and untreated Si substrates. By simultaneously annealing samples of differing thin film thicknesses on the two types of treated silicon substrate in the same ambient (vacuum of  $6 \times 10^{-2}$  mbar) a direct comparison is made between the samples. It is shown that the average domain spacing's for perpendicular-to substrate morphology is approximately 40 nm. Additionally, the effect of thin film thickness on the formation of a perpendicular morphology is clearly demonstrated, with a thickness repeat period of approximately 32 nm. Importantly, interface effects are seen between the thin film and both the substrate and vacuum interfaces, and a minimum vacuum quality is shown to be a necessary requirement for producing uniform perpendicular morphologies across the thin film.

**Are you currently a postgraduate student? (Yes/No)**

Yes

**At what level of studies are you currently? (Hons/MSc/PhD)**

PhD

**Please provide the name and email address of your supervisor.**

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