

Dynamical Studies of spin-coated polymer films

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Spin-coated polymer blends possess a rich variety of accessible non-equilibrium morphologies, formed through self-assembly process (phase-separation, crystallisation, stratification, agglomeration), the complexities of which are not yet fully understood. The technique of stroboscopic microscopy has been developed to allow direct observations of microscopic and mesoscopic morphological development during spin-coating and has afforded unequivocal information regarding morphological development. The technique so far has three modes of operation providing information on topographical,¹ compositional,² and crystal development.³

This poster will present an overview of the progress that has been made in the development of this technique and the key insights into self-assembly it has afforded us. Specifically I will present the direct observations of self-assembly processes in both model polymer systems and industrial relevant semiconducting polymer systems and show how these observations can be utilised to either, rationally design processing conditions that will allow targeted morphologies to be attained or how we can use information obtained in real-time to direct and control self-assembly processes in order to achieve the desired morphology.

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2. D. T. W. Toolan, A. J. Parnell, P. D. Topham and J. R. Howse, *Journal of Materials Chemistry A*, 2013, 1, 3587-3592.
3. D. T. Toolan, N. Pullan, M. J. Harvey, P. D. Topham and J. R. Howse, *Adv Mater*, 2013.