Abstract Submitted
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An in-situ study of structure evolution in block copolymer thin films of PS-PEO during solvent vapor annealing PARVANEH MOKARIAN-TABARI, Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN), Trinity College and Dept of Chemistry, University College Cork, Cork, Ireland, TIMOTHY W. COLLINS, Department of Chemistry, University College Cork, Cork, Ireland , MICHAEL A. MORRIS, Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN), Trinity College and Dept of Chemistry, University College Cork, Cork, Ireland — Thin films of block copolymers are promising candidates for producing nano scale structures in the electronic industry such as sub-30 nm templates for nanolithography [1]. To be able to produce structures with desired morphologies and minimum defects, it is important to have a deep understanding of the ordering mechanism. We have carried out a systematic study on spin cast films made of poly(styrene-b-ethylene oxide) block copolymers during solvent and thermal annealing. The swelling behavior of the films were studied by using an environmental cell to control the vapor pressure of the gas and equipped with small angle light scattering apparatus. Our results show that the swelling starts within seconds of exposure to toluene vapor and the domains form within minutes. Cyclic transition between perpendicular and horizontal arrays is observed. [1] Ruiz R, Kang H M, Detcheverry F A, Dobisz E, Kercher D S, Albrecht T R, de Pablo J J and Nealey P F, 2008, **321,** 936

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