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In Situ X ray scattering for investigating morphology of bottle brush BCP with Solvent annealing GAJIN JEONG, THOMAS P. RUSSELL, Univ of Mass - Amherst, BENJAMIN R. SVEINBJORNSSON, ROBERT H. GRUBBS, California Institute of Technology, UNIV OF MASS - AMHERST COLLABORATION, CALIFORNIA INSTITUTE OF TECHNOLOGY COLLABORATION — We investigated the morphology of bottle-brush block copolymer (BrBCPs) thin films using solvent vapor annealing (SVA) in a specially designed chamber for *in situ* grazing incidence x-ray scattering. BrBCPs with polystyrene (PS) and poly(lactic acid) (PLA) side chains and a norbornene backbone were studied SVA using THF, a good solvent for PS and PLA, a controlled swelling and deswelling rate were achieved with N₂ carrier gas. Film thickness was monitored by optical interferometry. The interference maximum, characteristic of the microdomain morphology, was found to vary linearly with molecular weight. The *in situ* GISAXS measurements were used to elucidate the evolution of the morphology in the thin films.

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