

Abstract Submitted
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Real-Time Guided Wave Depolarized Light Scattering of Block Copolymer Thin Films during in Situ Annealing JEFFREY WILBUR, NITASH BALSARA, UC Berkeley, ZHUANGXI FANG, MAURICE NEWSTEIN, BRUCE GARETZ, Polytechnic University — The guided wave depolarized light scattering technique for measuring grain structure in block copolymer thin films has been further developed to enable us to measure scattering in films heated above the glass transition temperature. We previously published work in which we used a prism to couple a plane-polarized beam into and out of the transverse magnetic (TM) mode of a glassy polymer film, measured the extent of depolarized scattering into the transverse electric (TE) mode within the film, and correlated the intensity of the TE signal to grain structure. Through the design and incorporation of a grating coupler system in which the polymer film is deposited onto the coupler itself, we have supplanted the prism coupler and removed the requirement that the measured film be glassy, enabling measurements of grain structure during annealing. Coupled with our recently developed theoretical solution for GWDLS, we are able to analyze the grain structure averaged over a 1 cm cross section of a film as it changes in real time.

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