

Simultaneous measurement of deformation and thickness change in polymer films

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Abstract

We present experimental results in deformation measurement and thickness change in polymer films employing Fourier domain interferometry. The set-up is a Michelson configuration in which interference signal between light reflected from a reference arm is superposed with two reflection from the first and second interface from the film sample. Distance measurements for determination of deformation and thickness values were obtained after an inverse Fourier transform of the spectrum signal. With this configuration, measurements with 1 micron axial resolution, and 2mm dynamic range were obtained.

Keywords: Experimental study Light interferometry Distance measurement Strain measurement Simultaneous measurement Measuring methods Optical method Polymers Fourier transformation