

Estimation of elastic property of polymeric thin film via metrology based on multilayer wrinkling

유성수, 유필진<sup>†</sup>  
성균관대학교  
(pjoyoo@skku.edu<sup>†</sup>)

Physical property of thin polymer film (thickness < 100nm) is different with bulk scale due to confinement effect. However, polymeric thin film have difficulty of quantifying its elastic property, because general measurement methods cannot be applied to thin film system. To overcome this challenge, wrinkling based metrology can be suggested. wrinkling based metrology estimate elastic modulus easily by measuring surface of wrinkle, and this method takes a number of advantages of cheap and simple process. However conventional metrology based on bilayer wrinkling cannot be applied high temperature system. Therefore we developed novel metrology which employ multilayer wrinkling that can overcome temperature limit. For this system, we firstly derived relation equation of wavelength and elastic modulus, because there is a little study on multilayer wrinkling. Then we measured elastic modulus of P4VP by using presented metrology and confirmed validity by comparing with theoretical values calculated by WLF equation.