# Sensitivity Analysis of 2-D Film Casting Process

최승원, 신동명, 이주성[1], 정현욱*, 현재천
고려대학교 화공생명공학과; [1]LG화학기술원
(hwjung@grtrkr.korea.ac.kr*)

The sensitivity to the ongoing sinusoidal disturbances has been examined using transient viscoelastic film casting simulation. Amplitude ratios of film thickness at both center and edge position and film width at the take-up with respect to a ongoing disturbance show resonant peaks along the frequency regime, where the frequencies at these points directly correspond to the imaginary parts of the successive leading eigenvalues from the linear stability analysis. The sensitivity results by Newtonian fluid have been compared with those by viscoelastic Phan-Thien and Tanner fluid. Also, effects of two important parameters of film casting process, i.e., the fluid viscoelasticity (Deborah number) and the aspect ratio have been scrutinized. Furthermore, the dichotomous behavior between extension thinning and thickening fluids in sensitivity analysis has been elucidated. It has been found that there exist optimal process conditions making the system less sensitive.