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Evolution of Chitosan Film Thickness Profiles During Spincoating CHRISTOPHER MURRAY, Lakehead University Orillia, MAXIMILIANO GIULIANI, JOHN DUTCHER, University of Guelph — Many hygroscopic biopolymers can be processed using aqueous solutions. For example, biopolymer films can be prepared by spincoating from dilute biopolymer solutions. We have spincoated ultrathin films of chitosan onto silicon substrates under controlled relative humidity (RH) using acetic acid solutions. Since the solvent is much less volatile than organic solvents that are typically used to spincoat thin films of synthetic polymers, the dynamics associated with the spincoating process can be several orders of magnitude slower. Because of the slow evaporation of the solvent, it is possible to control the thickness by controlling the RH value in the spincoating chamber. To gain insight into the spincoating process, we have collected images of the film during spincoating using a high-speed camera. This has allowed us to determine the evolution of the radial profile of the chitosan film thickness, which can be correlated with the final film thickness values measured using ellipsometry. We compare the measured film thickness profiles with those predicted by theoretical models of spincoating.

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