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Orientation distribution in a uniaxially and biaxially drawn poly(L-lactic acid) by Raman spectra MIN SANG PARK, School of Polymer, Textile and Fiber Engineering, Georgia Institute of Technology, Atlanta, GA, USA, YEE SHAN WONG, SUBBU VENKATARAMAN, School of Materials Science and Engineering, Nanyang technological University, Singapore, MOHAN SRINIVASARAO, School of Polymer, Textile and Fiber Engineering, School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA, USA — In this study, we used the polarization modulation of Raman scattering intensities to study molecular orientation distribution in the crystalline and amorphous regions of uniaxially and biaxially drawn poly(L-lactic acid) (PLLA) film. Changes of orientation distribution were detected as a function of stretching ratios and different characteristics of orientation between crystalline and amorphous region were analyzed using Raman bands which are assigned to the each region. As results, quantification of oriented molecule information named orientation order parameters was determined. From experimentally obtained order parameters, the most probable molecular orientation distribution functions for the crystalline and amorphous regions in the film could be constructed.

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