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**Spectroscopic analysis of poly(lactic acid) crystals and their formation** KAORU AOU, SHUHUI KANG, SHAW LING HSU, University of Massachusetts — Vibrational spectroscopic analyses (both experimental and normal coordinate analysis) have been used to analyze the various crystalline forms (stereocomplex and alpha crystal) associated with poly(lactic acid). Spectroscopic features reflecting the different symmetry species in chain conformation and interchain packing have been characterized. Normal coordinate analyses for the single chain and crystalline state have been carried out. In addition to the intramolecular bonded and non-bonded interactions, transition dipole coupling of the carbonyl groups have been incorporated. From experimental and symmetry arguments, it is possible to explain the origin of the unexpected features associated with either homopolymer or stereocomplex. It was also possible to clarify during the crystallization process that chain conformation order was established first, followed by packing order.

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