

Characterization of the Polylactic acid stretched uniaxial and annealed by Raman spectrometry and Differential scanning calorimetry

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Abstract: In this work, we have been interested in the characterization of the effect of heat treatment and mechanical treatment on the crystallinity of polylactic acid (PLA) film by two techniques, DSC and Raman spectroscopy. The results obtained by the DSC for the stretched film shows the appearance of a broad peak of crystallization around 120 °C, a rise in melting peak in a significant way, which shows that the uniaxial stretching has increased the crystallinity of the PLA, whereas for the annealed film appearance of a double melting peak. The result obtained by Raman spectroscopy shows new peaks appears at 922 cm⁻¹ and 540 cm⁻¹ after stretching and annealed process, indicating the crystallization process.

Keywords : PLA, glass transition, Raman spectroscopy, DSC