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ASSESSMENT OF THE GLASS TRANSITION AND THE MELTING/CRYSTALLIZATION TEMPERATURES OF POLYMERS EXPOSED TO CARBON DIOXIDE. A NEW EXPERIMENTAL TECHNIQUE

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Abstract

Assessment of how the glass transition and /or the melting (or crystallization) temperatures of polymers are altered when exposed to supercritical or compressed carbon dioxide is of utmost importance in polymer processing and modifications such as extrusion, foaming and impregnation. We have developed a new experimental technique which permits documentation of how the storage and loss moduli of polymers change in carbon dioxide as a function of pressure and /or temperature from which the transition temperatures are determined. The technique allows determination of both T_g and T_m in the same instrument without changing the sample. The technique will be described with results obtained with amorphous and semi-crsytalline polymers.