

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Kinetic Partitioning of 1-Butene Defect in Random Propylene 1-Butene Copolymers by Time-Resolved FTIR CAROLINA RUIZ-ORTA, RUFINA G. ALAMO¹, FAMU-FSU College of Engineering Chemical and Biomedical Engineering Department, 2525 Pottsdamer St., Tallahassee, FL 32310 — Two different types of regularity bands are identified in a time-resolved FTIR crystallization of a series of random isotactic propylene 1-butene copolymers with a concentration of 1-butene from 2 to 19 mol%. The first type are bands associated with 31 helices of isotactic sequences of different n length (n , number of monomer units). The second are regularity bands at 830, 920, 1010 and 1240 cm^{-1} associated with continuous sequences of the chain that include the 1-butene comonomer. Conformational changes during the isothermal crystallization process were monitored with these regularity bands. The variation of the intensity of regularity band at 920 cm^{-1} with crystallinity content and a shift of the 841 cm^{-1} ($n = 12$) at lower frequencies correlate with the content of comonomer included in the crystal. Changes in frequency of the $n = 12$ band with varying crystallization temperature (T_c), and with crystallization time at a fixed T_c are associated with the kinetic partitioning of the comonomer units, that was quantified with data obtained from ^{13}C NMR. The frequency shift is absent in copolymers with co-units that are excluded from the crystalline regions, such as the 1-octene comonomer.

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Date submitted: 24 Nov 2010

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