

Abstract Submitted
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**Overall Isothermal Crystallization Kinetics of
Precision Polyethylenes with Bromine in a Wide Temperature Range**

XIAOSHI ZHANG, WEI ZHANG, Florida State University, EMINE BOZ, KENNETH B WAGENER, University of Florida, RUFINA G ALAMO, Florida State University — The overall crystallization kinetics of the two major polymorphs of a series of polyethylenes with bromine atoms precisely placed on each and every 9th, 15th, and 21st backbone carbon have been studied by real time FTIR with parallel morphological studies by polarized optical microscopy (POM), wide-angle X-ray diffraction (WAXD), and differential scanning calorimetry (DSC). The crystallization kinetics are unusual due to the presence of two inversions in the temperature coefficient of the overall crystallization rate. The low temperature inversion takes place in a temperature range where the two polymorphs coexist, and the second, high temperature inversion is found in a temperature range where only Form II can develop. The mechanism that leads to this unusual behavior will be discussed.

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