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SANS Study of Polyethylene Crystallization from Solution

HOWARD WANG, Department of Materials Science and Engineering, Michigan Technological University, Houghton, MI 49931, BOUALEM HAMMOUDA, NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD 20899 — Crystallization of low molecular weight polyethylene from solution has been studied using small angle neutron scattering. The primary focus is on concentrated solutions that resemble some features of polymer melts. Both the static structure and kinetics of structure evolution are illustrated. In the limit of current detection sensitivity and spectrum resolution, the high-Q cut-off during the initial crystal growth indicates the length scale of the lamellar thickness. This observation is discussed in the light of the critical nucleus dimension at the early stage of crystallization.

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