

Abstract Submitted
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Amorphous solid helium in porous media¹ JACQUES BOSSY, Institut Neel, CNRS-UJF, Grenoble, THOMAS HANSEN, Institut Laue-Langevin, Grenoble, HENRY GLYDE, University of Delaware — Neutron scattering measurements of the static structure factor, $S(Q)$, of helium confined in the porous media MCM-41 of pore diameter 47 ± 1.5 Å are presented. Beginning in the liquid phase, as temperature is decreased at constant pressure the $S(Q)$ shows a transition from the liquid to an amorphous solid. No Bragg peaks are observed in the solid and the $S(Q)$ of the solid differs little from that of the liquid. On freezing, a small additional intensity in \square near the main peak of the liquid $S(Q)$ ($Q \simeq 2.2$ Å⁻¹) is observed. The $S(Q)$ is compared with simulations of freezing and melting in porous media which support the interpretation of freezing to an amorphous solid. From the measurements of freezing, an approximate phase diagram is determined. A similar amorphous solid $S(Q)$ is observed in 34 Å gelsil.

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