## Abstract Submitted for the MAR14 Meeting of The American Physical Society

Localized Bose-Einstein Condensation in Liquid <sup>4</sup>He in Disorder HENRY R. GLYDE, Department of Physics and Astronomy, University of Delaware, Newark, Delaware 19716-2593, USA, JACQUES BOSSY, Institut Néel, CNRS-UJF, BP 166, 38042 Grenoble Cedex 9, France, JACQUES OLLIVIER, HELMUT SCHOBER, Institut Laue-Langevin, BP 156, 38042 Grenoble, France — Liquid <sup>4</sup>He in porous media is an example of Bosons confined to nanoscales and in disorder. In porous media, the superfluid phase is suppressed to low temperature. The smaller the pore size, the further the transition temperature to the superfluid phase,  $T_c$ , is suppressed below the bulk value,  $T_{\lambda}$ . In 28 A pore diameter FSM, for example,  $T_c$ = 0.8 K compared with  $T_{\lambda}$  = 2.17 K at saturated vapor pressure[1]. We present measurements of the phonon-roton (P-R) modes and of Bose-Einstein condensation (BEC) of liquid <sup>4</sup>He in porous media. These measurements show that the "critical" temperature of BEC in porous media,  $T_{BEC}$ , lies close to  $T_{\lambda}$  largely independent of the porous media investigated. There is a temperature range,  $T_c < T < T_{BEC}$ , in which there is BEC but no superflow. This is interpreted as a "localized" BEC (LBEC) region. The model of the LBEC liquid is isolated islands or blobs of BEC separated by otherwise normal liquid. The phase of each island is independent so that there is no phase coherence across the sample as needed for superflow. The P-R data and LBEC phase will be discussed.

[1] J. Taniguchi, Y. Aoki and M. Suzuki, Phys. Rev. B82, 104509 (2010).

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