Abstract Submitted
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High Porosity Silica Aerogels Engineered for Superfluid ^{3}He Research J. POLLANEN, S. BLINSTEIN, H. CHOI, J.P. DAVIS, T.M. LIPPMAN, K.R. SHIRER, W.P. HALPERIN, Department of Physics and Astronomy, Northwestern University, L.B. LURIO, Department of Physics, Northern Illinois University — Silica aerogel is a network of strands with a diameter of 3 nm and average separation $\xi_a \approx 30 - 100$ nm. Low-density aerogel can be used to introduce disorder in superfluid ^{3}He because the superfluid coherence length is of the same order as ξ_a. We have developed novel sample growth and preparation techniques for producing aerogels for a variety of measurements on superfluid ^{3}He. In particular, it has been proposed that anisotropic aerogels can be used to understand the stability of the A-like superfluid ^{3}He phases [1, 2]. We can introduce anisotropy in aerogel on length scales relevant to superfluid ^{3}He. Anisotropy can be induced with uniaxial strain, or alternatively, during growth and drying stages. We have performed small angle x-ray scattering to probe these two types of anisotropy and find that uniaxial strain can be used to tune between them. [1] C.L. Vicente, *et al.*, *Phys. Rev. B.* **72**, 094519 (2005). [2] K. Aoyama and R. Ikeda, *Phys. Rev. B* **73**, 060504(R) (2006).

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