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Progress toward an air-dried HAPL target capsule[1] JOHN KARNES, JONATHAN STREIT, BRIAN MOTTA, NICOLE PETTA, Schafer Corporation, SHANNAN DOWNEY, MICHAEL DROEGE, Ocellus Inc. — NRL's High Average Power Laser (HAPL) Program works to design an inertial fusion energy power plant based on a modular laser system and direct drive targets. One task of this project is the development of a coated low density foam shell to contain the cryogenic deuterium-tritium (DT) fuel. An economic model of the HAPL fusion power plant requires that these foam capsules must be produced at a cost of less than 25¢ each for the plant to produce competitively priced energy. Capsule materials of interest are open celled structures with submicron-scale pores. If allowed to "air-dry," capillary forces at air-liquid interfaces within the pores destroy the capsule's morphology. Critical point drying, a costly production step, is used to avoid this problem. We present recent work towards developing a low density HAPL capsule prototype that avoids this processing step by synthesizing a low density material that survives "air-drying."

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