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**Critical detonation thickness in vapor-deposited hexanitroazobenzene (HNAB) films with different preparation conditions** ALEXANDER S. TAPPAN, ROBERT KNEPPER, MICHAEL P. MARQUEZ, J. PATRICK BALL, JILL C. MILLER, Sandia National Laboratories — At Sandia National Laboratories, we have coined the term “microenergetics” to describe sub-millimeter energetic material studies aimed at gaining knowledge of combustion and detonation behavior at the mesoscale. Films of the high explosive hexanitroazobenzene (HNAB) have been deposited through physical vapor deposition. HNAB deposits in an amorphous state that crystallizes over time and modest heating accelerates this crystallization. HNAB films were prepared under different crystallization temperatures, and characterized with surface profilometry and scanning electron microscopy. The critical detonation thickness for HNAB at different crystallization conditions was determined in a configuration where charge width was large compared to film thickness, and thus side losses did not play a role in detonation propagation. The results of these experiments will be discussed in the context of small sample geometry, deposited film morphology, crystal structure, and density.

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