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Submonolayer C₆₀ films on ultrathin SiO₂¹ MICHELLE GROCE, CNAM and MRSEC, Physics Department, University of Maryland at College Park, BRAD CONRAD, National Institute of Standards and Technology, WILLIAM CULLEN, ELLEN WILLIAMS, CNAM and MRSEC, Physics Department, University of Maryland at College Park — The nucleation and growth of C₆₀ thin films on ultrathin SiO₂ are studied using room temperature scanning tunneling microscopy. Organic electronic devices are typically grown on a relatively thick SiO₂ substrate, which limits the techniques which may be used to characterize them. The ultrathin oxide layer grown on Si(111)-(7x7) presents a chemically equivalent interface, yet is thin enough to allow characterization by STM which achieves the highest possible spatial resolution. It has been reported that C₆₀ films initially follow the Volmer-Weber growth mode on insulating substrates, but there has previously been little investigation of their nucleation in the submonolayer regime. We report the morphological characteristics of films from 0.02 to 1 monolayer in thickness, varying the physical vapor deposition flux rate and the substrate temperature during deposition.

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