

Abstract Submitted
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Step fluctuations on Ag(111) surfaces with C₆₀¹ CHENGGANG TAO, TIM STASEVICH, TED EINSTEIN, ELLEN WILLIAMS, Physics Department, University of Maryland, College Park — STM has been used to characterize fluctuation properties of segments of step edges partly covered by C₆₀ on Ag(111) at room temperature. The distribution of C₆₀ at step edges exhibits a step orientation dependence: low-symmetry step edges are more favorable for C₆₀ binding. The temporal correlation functions of step segments between C₆₀-covered step regions scale as a power law, with an average exponent of 0.23 ± 0.02 , indicating that fluctuations of these “confined” steps are consistent with step-edge diffusion limited fluctuations. Parameters extracted from temporal correlation and autocorrelation analysis consistently indicate that close-packed steps have smaller fluctuation magnitude and higher step mobility than low-symmetry steps. The measured system sizes of step segments with different lengths show at most a weak step-length dependence. Fluctuation features thus yield the surprising conclusion that C₆₀ molecules are not acting as pinning points that constrain mass transport along the step edges.

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