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Reversible island nucleation and growth with anomalous diffusion[1] EHSAN SABBAR, JACQUES AMAR, University of Toledo — Motivated by recent experiments on submonolayer organic film growth with anomalous diffusion, a general rate-equation (RE) theory of submonolayer island nucleation and growth was developed [J.G. Amar and M. Semaan, Phys. Rev. E **93**, 062805 (2016)] which takes into account the critical island-size i, island fractal dimension d_f, substrate dimension d, and diffusion exponent μ,and good agreement with simulations was found for the case of irreversible growth corresponding to a critical island-size $i = 1$ with $d = 2$.However, since many experiments correspond to a critical island-size larger than 1, it is of interest to determine if the RE predictions also hold in the case of reversible island nucleation with anomalous diffusion.Here we present the results of simulations of submonolayer growth with $i = 2$ ($d = 2$)which were carried out for both the case of superdiffusion ($\mu > 1$) and subdiffusion ($\mu < 1$) as well as for both ramified islands ($d_f \simeq 2$) and point-islands ($d_f = \infty$). In the case of superdiffusion,excellent agreement is obtained with the RE theory for the exponents $\chi(\mu)$ and $\chi_1(\mu)$ .In the case of subdiffusion we find only partial agreement with the RE theory for the case $i = d = 2$.

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