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Kinetic Monte Carlo Simulations of a Lattice-Gas Model of Pulsed Electrodeposition with Diffusion TJIPTO JUWONO, PER ARNE RIKVOLD, IBRAHIM ABOU HAMAD, Florida State Univ. — We have studied the effect of diffusion during the desorption phase in pulsed electrodeposition in a square lattice-gas model using Kinetic Monte Carlo simulations. In cases without diffusion, the desorption rate increases when the size distribution of the droplets is dominated by smaller clusters at the beginning of the desorption process. For a particular initial size distribution, the presence of diffusion increases the desorption rate. As we decrease the average initial droplet size, the increase in the desorption rate becomes less pronounced. By analyzing the size distributions at different times during the desorption process we found that the dynamics of the size distribution when diffusion is present follows the same pattern as the dynamics of size distributions without diffusion, only with a difference in magnitude. Therefore, the effect of diffusion on the desorption rate also decreases when the size distribution of the droplets is dominated by smaller clusters.

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