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**Effects of Lateral Diffusion on the Dynamics of Desorption** TJIPTO JUWONO, IBRAHIM ABOU HAMAD, PER ARNE RIKVOLD, Florida State University — The adsorbate dynamics during simultaneous action of desorption and lateral adsorbate diffusion is studied in a simple lattice-gas model by kinetic Monte Carlo simulations. It is found that the action of the coverage-conserving diffusion process during the course of the desorption has two distinct, competing effects: a general acceleration of the desorption process, and a coarsening of the adsorbate configuration through Ostwald ripening. The balance between these two effects is governed by the structure of the adsorbate layer at the beginning of the desorption process. It is found that when starting with larger cluster sizes, the acceleration effect of diffusion dominates, while starting with smaller cluster sizes results in the dominance of coarsening. It is also found that the initial size distribution of the adsorbate determines both the quantitative and the qualitative features of the distribution as it develops during the desorption process.

Tjipto Juwono
Florida State University

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