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Irreversible nanoparticle adsorption on patterned substrates A. CADILHE, N. A. M. ARAUJO, GCEP - Centro de Fisica - Universidade do Minho, V. PRIVMAN, Center for Quantum Device Technology - Clarkson University - Potsdam - NY 13699-5820 - USA — The adsorption of nanoparticles on a surface has interest in fields like heterogeneous catalysts and quantum dots. We simulate the monolayer adsorption of nanoparticles on patterned substrate. We adopted a pattern consisting of equal squares of size α and a distance β apart from each other, and characterize the system, by reckoning the mean value and variance of the distance between the nanoparticles and the radial distribution function of their distances. Proper control of α and β parameters leads to morphologies range from lattice to homogeneous, with interesting non-trivial behaviors in between. Our study shows the relevance of geometrical constraints to obtain different morphologies of colloidal monolayer films with potential for practical applications.

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