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Adsorption-desorption kinetics of soft particles onto surfaces BRENDAN OSBERG, ULRICH GERLAND, Technische Universitt Mnchen — A broad range of physical, chemical, and biological systems feature processes in which particles randomly adsorb on a substrate. Theoretical models usually assume hard (mutually impenetrable) particles, but in soft matter physics the adsorbing particles can be effectively compressible, implying soft interaction potentials. We recently studied the kinetics of such soft particles adsorbing onto one-dimensional substrates, identifying three novel phenomena: (i) a gradual density increase, or "cramming", replaces the usual jamming behavior of hard particles, (ii) a density overshoot, can occur (only for soft particles) on a time scale set by the desorption rate, and (iii) relaxation rates of soft particles increase with particle size (on a lattice), while hard particles show the opposite trend. The latter occurs since unjamming requires desorption and many-bodied reorganization to equilibrate -a process that is generally very slow. Here we extend this analysis to a two-dimensional substrate, focusing on the question of whether the adsorption-desorption kinetics of particles in two dimensions is similarly enriched by the introduction of soft interactions. Application to experiments, for example the adsorption of fibrinogen on two-dimensional surfaces, will be discussed.

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