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Field-induced growth of self-annealing suspended colloidal monolayers MING HAN, ERIK LUIJTEN, Northwestern University, LUIJTEN RESEARCH GROUP TEAM — Due to their reduced dimensionality, flexible sheet-like materials have numerous applications, e.g. offering the potential to serve as functional coatings or as a system for encapsulation, akin to biologic membranes. Here we report the ability to generate large ordered, flexible, and suspended monolayers via field-induced self-assembly. We employ anisotropic polarizable colloidal particles and stimulate their reversible aggregation by applying a static external electric field. Through molecular dynamics simulations with a self-consistent calculation of the induced dipole moments, we demonstrate that such particles form monolayers capable of eliminating defects and dislocations, and even self-healing. Potential applications, such as tube formation, are also discussed.

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