

Polymeric mobility induced self-assembly of nanomaterials and its application to microbattery electrodes

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We demonstrate a simple but robust method of observing the process of polyelectrolyte interdiffusion by adsorbing charged viruses onto the surface of polyelectrolyte multilayers. The surface mobility of the underlying polycation enables the close-packing of viruses adsorbed electrostatically to the film so as to achieve a highly packed structure. We also demonstrate the two-dimensional biomineralization from this monolayer template of M13 virus for nanoparticles and nanowires self-assembly. For an application, furthermore, we present a versatile approach for fabricating and positioning small battery components that would enable high performance microbatteries with complex architectures that can be placed on flexible substrates.