

Abstract Submitted
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Connecting quantum dots and bionanoparticles in hybrid nanoscale ultra-thin films RAVISUBHASH TANGIRALA, YUNXIA HU, QINGLING ZHANG, JINBO HE, THOMAS RUSSELL, TODD EMRICK, University of Massachusetts, Amherst — Aldehyde-functionalized CdSe quantum dots and nanorods, and horse spleen ferritin bionanoparticles, were co-assembled at an oil-water interface. Reaction of the aldehydes with the surface-available amines on the ferritin particles enabled cross-linking at the interface, converting the assembled nanoparticles into robust ultra-thin films. The cross-linked capsules and sheets thus made by aldehyde-amine conjugation could be disrupted by addition of acid. Reductive amination chemistry could be performed to convert these degradable capsules and sheets into structures with irreversible cross-linking. Fluorescence confocal microscopy, scanning force microscopy and pendant drop tensiometry were used to characterize these hybrid nanoparticle-based materials, and transmission electron microscopy (TEM) confirmed the presence of both the synthetic and naturally derived nanoparticles.

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