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**2-D Hierarchical Structure of Block Copolymer / Bio-nanoparticle Complexes** DONGSEOK SHIN, University of Massachusetts, Amherst, THOMAS RUSSELL, University of Massachusetts, Amherst — The morphology of complexes made of poly(styrene-*b*-*N*-methyl-4-vinylpyridinium iodide) (PS-P4VPMel) and horse spleen ferritin was investigated. A polymer film was casted on a substrate then was immersed in a protein solution to allow for protein adsorption. After rinsing the sample with deionized water and drying, the specimen was placed in a mixed vapor of benzene and water. This solvent annealing technique has allowed us to get the final morphology of the complex at ambient condition. At low loading of ferritin, the morphology of the block copolymer was conserved and the ferritin was localized at the microdomains of the minor component (P4VPMel). As the loading of ferritin increased, the microdomains containing ferritin particles grew in size and elongated in shape. Eventually, the microdomains occupied by ferritin were connected and formed closed loops at high loading of ferritin. However, in the area enclosed with the loops, the morphology of the block copolymer itself was maintained. As a result, we were able to get a hierarchical structure by incorporating bio-nanoparticles into block copolymer thin films.

Dongseok Shin  
University of Massachusetts, Amherst

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