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Modeling the Self-Assembly of Nanoparticle Amphiphiles SANAT KUMAR, Columbia University, ATHANASSIOS PANAGIOTOPOULOS, Prnceton University — We demonstrate that spherical nanoparticles, uniformly grafted with macromolecules, robustly self-assemble into a range of anisotropic superstructures when they are dispersed in the corresponding homopolymer matrix. Theory and simulations both suggest that this self-assembly process reflects a balance between the energy gain when particle cores approach and the entropy of distorting the grafted polymers. The effectively directional nature of the particle interactions is thus a many-body *emergent property.*

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