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Entropically Driven Colloidal Assembly in Emulsions KENG-HUI

LIN, Institute of Physics, Academia Sinica, Taipei, Taiwan, LIANG-JIE LAI, Dept. of Physics, National Central University, Chungli, Taiwan, HUI CHEN, Dept. of Chemical Engineering, National Central University — Using the techniques developed by Manoharan [1], we encapsulate small numbers of colloidal microspheres and polymers in oil-in-water emulsion droplets, remove the oil and generate colloidal clusters covered with polymers. We observe two types of arrangement in the clusters. The first kind is the same as the type reported in [1] of which the clusters are formed without polymer. The second kind is the same as the structure reported in [2] of which the clusters are formed by binary colloidal microspheres. The polymers we put in the emulsions induce depletion interactions between colloidal particles. We will show that two types of structures are from the interplay between the depletion interactions and surface tension. [1] Manoharan, Elsesser, Pine, *Science* **301**, 483(2003). [2] Cho *et al.* *JACS* **127**, 15968 (2005).

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