

The structure of colloidosomes with tunable particle density: simulation vs experiment

Riccardo Fantoni

*National Institute for Theoretical Physics (NITheP) and Institute of Theoretical Physics,
University of Stellenbosch, Stellenbosch 7600, South Africa*

Johannes W. O. Salari

*Department of Polymer Chemistry, University of Technology Eindhoven,
P.O. Box 513, 5600 MB Eindhoven, the Netherlands*

Bert Klumperman

*Department of Polymer Chemistry, University of Technology Eindhoven,
P.O. Box 513, 5600 MB Eindhoven, the Netherlands and Stellenbosch University,
Department of Chemistry and Polymer Science, Private Bag X1, 7602 Matieland, South Africa*

(Dated: May 24, 2012)

In this paper we describe how *colloidosomes* are created in our laboratory from a Pickering emulsion of water droplets in oil. The colloidosomes have approximately the same diameter and by choosing (hairy) particles of different diameters it is possible to control the particle density on the droplets. The experiment is performed at room temperature. The radial distribution function of the assembly of (primary) particles on the water droplet is measured in the laboratory and in a computer experiment of a fluid model of particles with pairwise interactions on the surface of a sphere and the two measurements are compared favorably.

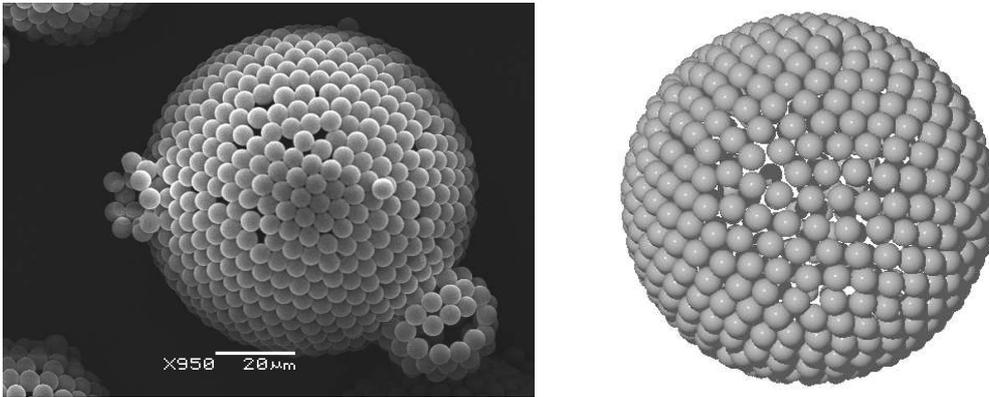


FIG. 1: Experimental colloidosome (on the left) *versus* simulated colloidosome (on the right)

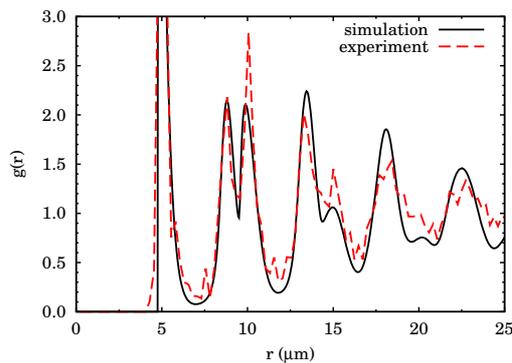


FIG. 2: Experimental radial distribution function *versus* simulated radial distribution function of the assembly of particles on the spherical droplet.