

Abstract Submitted
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Turning colloidal hard spheres into binary crystals of oppositely charged particles A. VAN BLAADEREN, C.G. CHRISTOVA, M.E. LEUNISSEN, C.P. ROYALL, A.-P. HYNINEN, M. DIJKSTRA, Soft Condensed Matter, Debye Inst., Utrecht University, The Netherlands — Sterically stabilized colloidal particles dispersed in apolar solvents are almost always slightly charged (~ 100 's of charges). However, this does not interfere with crystallization at high volume fractions. At low volume fractions the consequences can be dramatic compared to hard-sphere behavior. We show that dispersions of *oppositely* charged colloids, that readily form equilibrium phases, can be made by using a mixture of sterically stabilized PMMA spheres. In the solvent mixture used both the density and index of the spheres can be matched. Among the binary crystals already observed are large (~ 0.5 mm) CsCl-type crystals made up of 2 micron sized spheres of opposite charge. Our findings open up a new direction of investigation for colloidal model systems: particles with (spherically symmetric) long-range attractive interactions. It also provides new avenues for the creation of binary crystals as it enables different crystal structures and easier and faster binary crystal growth.

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