Abstract Submitted
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Critical Casimir Effect provides novel Control of Colloidal Interactions PETER SCHALL, University of Amsterdam — The Casimir Effect is a celebrated phenomenon in quantum physics. It manifests itself as the effective attraction between two dielectrics brought close to each other to confine fluctuations of the electromagnetic field. A similar force arises between two surfaces in a liquid mixture close to its critical point: Confinement of critical fluctuations of the liquid results in an attractive force between the walls, when the wall separation is of the order of the correlation length of the liquid. We use this effect for a fine control of colloidal interactions. The temperature dependence of the correlation length allows us to 'freeze' a colloidal gas into a colloidal liquid, and a liquid into a solid. This offers novel opportunities for the assembly of micro- and nanomaterials. I will present recently developed optically transparent systems that allow use of conventional light scattering and confocal microscopy to study Critical Casimir-mediated particle assembly.

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