Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

**Anisotropic colloids for building complex molecular structures using critical Casimir effect** TRUC ANH NGUYEN, University of Amsterdam, DANIELA KRAFT, New York University, SANDRA VEEN, PETER SCHALL, University of Amsterdam — Here, we present a new way to build complex colloidal scale structures using critical Casimir forces on anisotropic colloids. These forces arise from the confinement of critical solvent fluctuations between the particle surfaces and allow temperature-control over the particle interactions. We use doublet particles made of polymethyl-methacrylate (PMMA) and exhibiting anisotropic surface charge densities, suspended in a binary liquid mixture. By controlling the applied temperatures of the system, we can tune the particle interactions of the two ends of the particles to observe different superstructures formed in time and space: at low temperature, the particles are randomly distributed and represent a gas phase; however, at higher temperatures, the particles form long chain-like structures and cubic crystal structures depending on the temperature difference to the solvent phase separation. This opens new opportunities to assemble complex building blocks for nano- and micro-devices.

Truc Anh Nguyen
University of Amsterdam

Date submitted: 05 Nov 2012 Electronic form version 1.4