Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

The impact of conformational fluctuations on self-assembly: Cooperative aggregation of archaeal chaperonin proteins[1] STEPHEN WHITELAM, Lawrence Berkeley National Laboratory, CARL ROGERS, ANDREA PASQUA, UC Berkeley, CHAD PAAVOLA, JONATHAN TRENT, Nasa Ames Research Center, PHILLIP GEISSLER, UC Berkeley — Protein complexes called rosettasomes self-assemble in solution to form large-scale filamentous and planar structures. The relative abundance of these aggregates varies abruptly with environmental conditions and sample composition. Our simulations of a model of patchy nanoparticles can reproduce this sharp crossover, but only if particles are allowed to switch between two internal states favoring different geometries of local binding. These results demonstrate how local conformational adaptivity can fundamentally influence the cooperativity of pattern-forming dynamics.

[1]We acknowledge funding from the US Department of Energy and BioSim European Union Network of Excellence.

Stephen Whitelam
Lawrence Berkeley National Laboratory

Date submitted: 13 Nov 2008 Electronic form version 1.4