Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Topological Defects by Size Polydispersity[1] ZHENWEI YAO, MONICA OLVERA DE LA CRUZ, Northwestern University — The engineering of defects in crystalline matter introduces entirely new physical properties of materials. The fascinating possible applications of defects, known as topological defects, provide great motivations to perform fundamental investigations to uncover their role on the physical properties of various systems. Here we investigate topological defects in size polydispersity on flat surfaces. Our simulations show that in polydispersed systems topological defects play the role of order-restoring. The perfect hexagonal lattice beyond a small defective region around the impurity particle is well protected. Moreover, size polydispersity is shown numerically here to be an essential ingredient to understand short-range attractions between like-charge disclinations. Our study suggests the promising potential of size polydispersity to engineer defects in real systems.

[1]We thank the support of the Office of the Secretary of Defense under the NSSEFF program award number FA9550-10-1-0167.

Zhenwei Yao
Northwestern University

Date submitted: 15 Nov 2013 Electronic form version 1.4