Non-native block copolymer nano-structures[1] KEVIN YAGER,
Brookhaven National Laboratory, PAWEL MAJEWSKI, University of War-
saw, ATIKUR RAHMAN, Indian Institute of Science Education and Research,
Pune, AARON STEIN, GREG DOERK, GWEN WRIGHT, CHARLES BLACK,
Brookhaven National Laboratory — We present emerging strategies for constructing
three-dimensional nanostructures whose shapes and symmetries go beyond those of
the bulk equilibrium block copolymer phase diagram. Photo-thermal methods can
be used to control block copolymer ordering; ordered layers can be stacked to yield
new lattice symmetries. This multi-layered ordering strategy can also be performed
in a responsive mode, where each self-assembled layer templates the ones that fol-
low. Finally, we describe how blending allows the self-assembling film morphology
itself to be responsive to underlying guide patterns. Taken together, these new mo-
tifs represent a toolbox for constructing 3D nanostructures with symmetries and
complexity far beyond the conventional self-assembled morphologies.

Kevin Yager
Brookhaven National Laboratory

Date submitted: 10 Nov 2016   Electronic form version 1.4