Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Direct Observation of Biaxial Confinement of a Semi-flexible Filament in a Channel M.C. CHOI, Univ. of Calif. Santa Barbara, J.H.KIM, M.W.KIM, S.Y.KWON TEAM[1], O.PELLETIER, Y.LI, P.A.PINCUS, C.R.SAFINYA TEAM[2], C.D.SANTANGELO TEAM[3], Z.WEN TEAM[4] — We have studied the biaxial confinement of a semi-flexible filament in a channel by in situ video fluorescence microscopy*. As the channel width decreases, F-actin undergoes a transition from a 2D random regime to a 1D biaxially confined regime, leading to an increased effective persistence length. A theoretical calculation shows that the tangent-tangent correlation function in the confined regime shows a minimum, then reaches to a constant at long distances, indicating that confinement induces long-range order in a semi-flexible filament. The location of the minimum of the experimental correlation function is consistent with our theoretical calculation. This work was supported by KISTEP I-03-064, KISTEP IMT-2000-B3-2, MOHW 0405-MN01-0604-0007, NSF DMR 00-80034, 05-03347, 02-03755, 01-29804, NSF CTS-0404444, ONR N00014-05-1-0540, and DOE W-7405-ENG-36. M.C.Choi acknowledges partial support from the Korea Research Foundation Grant KRF-2005-214-C00202.
*M.C.Choi et al., *Macromolecules*, 38, 9882 (2005)

[1]KAIST, KRISS
[2]Univ. of Calif. Santa Barbara
[3]Univ. of Pennsylvania
[4]Univ. of Chongqing, China

M.C. Choi
Univ. of California Santa Barbara

Date submitted: 29 Nov 2005 Electronic form version 1.4