Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Concentration Fluctuations of a Semidilute Polymer Solution in Good Solvent Near a Repulsive Surface CATHERINE YEH, PHILIP PINCUS, Department of Physics, University of California, Santa Barbara, ALEXANDRA ZIDOVSKA, Dept. of Systems Biology, Harvard Medical School and School of Engineering and Applied Sciences/Dept. of Physics, Harvard University — The concentration profile of a semidilute polymer solution in good solvent near a repulsive surface has been previously calculated.[1] In this work we consider fluctuation corrections to the mean field concentration profile in the presence of a repulsive surface using the Cahn-Hilliard square-gradient approach extended to polymer interfaces. Our results predict that at strongly repulsive surfaces, a polymer in good solvent exhibits concentration fluctuations associated with the surface in addition to fluctuations of the bulk polymer solution. We compare our predictions with current experiments which have measured fluctuations in the concentration of interphase chromatin (DNA with its associated proteins) inside the nucleus of mammalian cells *in vivo* using ultrafast high space resolution spinning disc confocal microscopy.

[1]J. F. Joanny, L. Leibler, P.-G. de Gennes, J. Polym. Sci. 17, 1073 (1979)

Catherine Yeh
University of California, Santa Barbara

Date submitted: 09 Nov 2011 Electronic form version 1.4