Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Effect of solvent viscosity on driven translocation of a semi-flexible polymer through a nanopore[1] RAMESH ADHIKARI, ANIKET BHATTACHARYA, University of Central Florida — We study the effect of solvent viscosity and pore diameter on the driven translocation of a semi-flexible chain using Langevin dynamics simulation. We observe that for a given chain stiffness the mean first passage time (MFPT) has a nonmonotonic dependence on the solvent viscosity. For moderate external biases, the MFPT decreases at very low solvent viscosity exhibiting a minimum before it increases linearly as a function of high solvent viscosity. We demonstrate a stiffer chain translocates faster than a flexible chain of same length at the low viscosity regime while the opposite is true at high viscosity regime. The effect of pore size on the translocation dynamics is more acute at low solvent viscosity (pore friction dominating regime), but has almost negligible effect at the high viscosity regime for the parameters used in our studies.

[1]Partially supported by UCF Office of Research and Commercialization & College of Science SEED grant

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Date submitted: 14 Nov 2014 Electronic form version 1.4