

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**The enhanced bubble formation in short dsDNA loops** O-CHUL LEE, WOKYUNG SUNG<sup>1</sup>, Pohang university of science and technology (POSTECH) — Recent experiments have shown the dsDNAs readily bend and loop over the nanometer scale much shorter than its persistence length (50 nm). Motivated by this, we study possibility of enhanced bubble formation in short dsDNA loops by evaluating free energy of bubble formation analytically, and also by simulating the breathing DNA model. We analyze the bubble size distribution and the average bubble size as a function of the loop length, which are compared with those of the linear DNA of the same length. 1) T. E. Cloutier and J Widom, *Mol. Cell* **14**, 355 (2004). 2) P. A. Wiggins *et al.*, *Nat. Nanotechnol.* **1**, 137 (2006). 3) O. Lee, J. H. Jeon and W. Sung, *Phys. Rev. E* **81**, 021906 (2010)

<sup>1</sup>Corresponding author

O-chul Lee  
Pohang university of science and technology (POSTECH)

Date submitted: 24 Nov 2010

Electronic form version 1.4