Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Atomic Force Microscope using Length-Extension Resonator, revealing an atomic resolution SUNGMIN KIM, MYUNGCHUL OH, HYUNG JOON CHO, SANGJUN JEON, MINJUN LEE, BEOMYONG HWANG, SEONG JOON LIM, YOUNG KUK, Seoul Natl Univ — Various molecular images with an sub-angstrom have been reported using an Atomic Force Microscope (AFM) force-sensed with a qPlus tuning fork. Length-Extension Resonator (LER) is alternative way to achieve the same goal. An LER has usually a higher resonance frequency and higher Q value that result in an order of magnitude higher sensitivity than a q-plus sensor. The noise can be reduced from the frequency dependence of $1/\sqrt{f}$. In this study we used an LER with the resonance frequency of $\sim$ 630 KHz. We designed and fabricated a cryogenic temperature current preamplifier having an 1 MHz bandwidth. This AFM was operated at 4.5 K under ultrahigh vacuum. Various molecular images will be presented in this presentation.

Sungmin Kim
Seoul Natl Univ

Date submitted: 15 Nov 2013 Electronic form version 1.4