

Experimental validity of highly sensitive atomic force microscope (AFM)

Yubo Lin, Hiroshi Yabuno, Xuan Liu

Abstract: In conventional AFM based on eigenfrequency shift of a single cantilever, the enhancement of sensitivity is restricted due to the state-of-the-art fabrication techniques. Here, we realized a new AFM system with high-sensitivity atomic force microscopy (AFM). This method is based on the eigenmode shift. As our previous research, to compensate for the effect of viscous damping, we produced self-excited oscillation by feedback control in the system. We experimentally confirmed the high sensitivity of the proposed method using prototype coupled macrocantilevers.

-
- ¹⁾ Yubo Lin, M.Sc.: Graduate School of Systems and Information Engineering, University of Tsukuba, Tsukuba Science City, 305-8573, Japan (JP), linyubo.mech@gmail.com.
 - ²⁾ Hiroshi Yabuno, Professor: Graduate School of Systems and Information Engineering, University of Tsukuba, Tsukuba Science City, 305-8573, Japan (JP), yabuno@esys.tsukuba.ac.jp.
 - ³⁾ Xuan Liu, M.Sc.: Graduate School of Systems and Information Engineering, University of Tsukuba, Tsukuba Science City, 305-8573, Japan (JP), lx19895156_0303@yahoo.ne.jp.