Abstract Submitted
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Functional probes for scanning probe microscopy YUKIO HASEGAWA, Institute for Solid State Physics, The University of Tokyo, KOTONE AKIYAMA, Institute for Materials Research, Tohoku University, MASAYUKI HAMADA, TOYOAKI EGUCHI, TOSHU AN, Institute for Solid State Physics, The University of Tokyo, YASUNORI FUJIKAWA, TOSHIO SAKURAI, Institute for Materials Research, Tohoku University — Inspite of importance of the probe in scanning probe microscopy (SPM), little attention was paid for the SPM probes for most of the measurements of SPM. We developed sharp metal-tip cantilevers with a typical curvature radius better than 5nm using focused ion beam (FIB) suitable for Kelvin probe force microscopy (KFM)[1]. We obtained atomically resolved KFM images with an energy resolution less than 3meV with the probe[2]. We also developed a glass-coated tungsten tip for synchrotron radiation-scanning tunneling microscopy with the FIB method[3] and obtained elementally resolved images in a resolution less than 20nm[4]. We are now developing a precise atomic force microscope (AFM) lithography[5] with the FIB-milled tip attached to a quartz tuning fork controlled by noncontact AFM. We will present recent results of our AFM lithography, such as an Au line with a width of 20∼30 nm and characters drawn with Au nano dots on a Si surface. 1 K. Akiyama *et al.*, RSI **76**, 033705 (2005) 2 T. Eguchi, K. Akiyama *et al.*, PRL **93**, 266102 (2004) 3 K. Akiyama *et al.*, RSI **76**, 083711 (2005) 4 T. Eguchi, K. Akiyama *et al.*, APL **89**, 243119 (2006) 5 K. Akiyama *et al.*, JP **61**, 22 (2007).

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