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Functional Probes for Scanning Probe Microscopy KOTONE AKIYAMA, IMR, Tohoku University, TOYOAKI EGUCHI, TOSHU AN, ISSP, The University of Tokyo, YASUNORI FUJIKAWA, IMR, Tohoku University, YUKIO HASEGAWA, ISSP, The University of Tokyo, TOSHIO SAKURAI, IMR, Tohoku University — For superior performance of scanning probe microscopy, we are working to fabricate functional probes. For Kelvin probe force microscopy, we fabricated a metal-tip cantilever by attaching a thin metal wire to a regular Si cantilever and milling it by focused ion beam (FIB)[1]. By using the W tip with a curvature radius of 3.5 nm, we obtained the potential profile of Ge/Si(105) surface in atomic resolution with the energy resolution better than 3 meV[2]. For synchrotron-radiation-light-irradiated scanning tunneling microscopy which aims at atomically resolved elemental analysis, we fabricated a glass-coated W tip using FIB[3]. It is found that the glass coating blocks the unwanted secondary electrons, which come from large area of the sample, by a factor of 40 with respect to the case no coating. Using the tip to detect the electrons emitted just below the tip, we obtained element specific images with a spatial resolution better than 20 nm under the photo irradiation whose energy is just above the adsorption edge of the element[4]. 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, in press

Kotone Akiyama
IMR, Tohoku University

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