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Improved high-bias stability of single-atom contacts formed by junction closing AKIRA SAKAI, Department of Materials Science and Engineering, Kyoto University, SHIN-SAKU WAKASUGI, ASICS Corporation, SHU KUROKAWA, Department of Materials Science and Engineering, Kyoto University — Single-atom contacts (SACs) of Au exhibit a conductance very close to G_0, the quantum unit of conductance, and would serve as an important element in atomic-scale devices. The high-bias stability of Au SACs has already been studied by some authors who found that the average break voltage of Au SACs is around 1.2 V [1,2]. These previous experiments, however, employed the break-junction method that tends to generate a large tensile force within a produced SAC and makes it liable to break at lower voltages than SACs under weaker forces. In order to reduce the internal junction force, we fabricated Au SACs not by breaking but by closing junctions. Our experiment at 4 K showed that the average break voltage of Au SACs formed by the junction closing goes up to 1.7 V. This non-negligible increase in the break voltage confirms that the reduction of the junction force should be a key for improving the high-bias stability of SACs. [1] R. H. M. Smit *et al.*, Nanotechnology **15**, S472 (2004). [2] D. Miura *et al.*, e-J. Surf. Sci. Nanotech. **7**, 891 (2009).

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