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STM and SQUID studies of quantum engineered Co magnetic nanoplateles on Si. U. M. MIRSAIDOV, J.-L. LI, S.-Y. QIN, C.K. SHIH, J. T. MARKERT, Department of Physics, The University of Texas at Austin, Z. ZHANG, Oak Ridge National Laboratory, Tennessee, J.-F. JIA, Q.-K. XUE, State Key Laboratory for Surface Physics and International Center for Quantum Structures, Institute of Physics, Chinese Academy of Sciences, Beijing — Self-organized Co platelets with uniform size and shape were grown on a template of ordered Al cluster arrays on Si(111)-7×7 surfaces. The Al nanocluster array not only suppresses reaction between Si and Co, but also enables formation of well-defined Co nanoplatelets. These platelets are equilateral triangles with fixed orientation and two-monolayer thickness, and the area of individual platelets is half of N^2 of the 7×7 unit cells. Despite their small volume (a few nm^3), these magnetic nanoplatelets exhibit unusually high blocking temperature (>100 K). The hysterisis curves obtained for these platelets suggest that easy axis of magnetization is perpendicular to the substrate plane. The perpendicular magnetization, high blocking temperature and growth on a silicon surface may make these platelets appealing for technological applications.

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