

Abstract Submitted  
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**Growth of Co nanoclusters on rutile TiO<sub>2</sub> (110) surface**<sup>1</sup> EN CAI, XUEWEN WANG, JIANDI ZHANG, Florida International University — Fabrication of magnetic nanodots with uniform size and density is one of the key issues of studying the structure and property of a nanomagnet system. We report here our studies on the growth of Co nanoclusters on rutile TiO<sub>2</sub> (110) surface. Well ordered TiO<sub>2</sub> (110) surface is prepared in the UHV chamber via Ar<sup>+</sup> sputtering and annealing. Co deposition is carried out in situ by molecular beam epitaxy and characterized with STM. Growth parameters are tuned to optimize the uniformity of dot size and density. Co dot coverage, size and density are investigated as functions of deposition rate and time as well as post-annealing temperature. Our results show that uniformity of the dots mainly depends on deposition rate, and the density of the dots primarily depends on the coverage of the dots, while the size of the dots depends mainly on the deposition rate and post-annealing temperature instead of coverage. Growth mechanism will be discussed.

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