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Stability of magic planar Ag clusters Y.P. CHIU, Department of Physics, National Sun Yat-sen University, Y.S. OU, Y.R. CHANG, Institute of Physics, Academia Sinica; Department of Physics, National Taiwan University, C.M. WEI, Institute of Atomic and Molecular Sciences, Academia Sinica;Institute of Physics, Academia Sinica, C.S. CHANG, TIEN T. TSONG, Institute of Physics, Academia Sinica — The spontaneous assembly of atoms and molecules in a system has attracted many research interests and created numerous potential applications. Utilizing the periodic pattern found on the Pb quantum islands, which are grown on the Si(111) surface, we have recently discovered that self-organized Ag planar clusters formed on these templates exhibit enhanced stability at some particular sizes [1]. Existence of the magic atom numbers in these clusters is mainly attributed to the electronic confinement effect. Here, we further explore the strength of these magic clusters subject to the temperature rise and oxygen exposure. Detailed calculations based on *ab initio* density functional theory have also been performed. The results help establish the relation between the physical and chemical stability of a magic Ag cluster and its size and shape. Ref:[1] Ya-Ping Chiu, Li-Wei Huang, Ching-Ming Wei, Chia-Seng Chang, and Tien-Tzou Tsong, Phys. Rev. Lett. **97**, 165504 (2006).

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