

Abstract Submitted
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Novel Atomic Rearrangement in the Pb Monolayer on Si(111) surfaces Induced by Atomic Hydrogen Adsorption. CHUNG-KAI FANG, Institute of Physics, Academia Sinica, Taiwan, R.O.C. and Department of Materials Science and Engineering, National Tsing Hua University, Taiwan, R.O.C, ING-SHOUH HWANG, SHIH-HSIN CHANG, Institute of Physics, Academia Sinica, Taiwan, R.O.C., LIH-JUANN CHEN, Department of Materials Science and Engineering, National Tsing Hua University, Taiwan, R.O.C., TIEN-TZOU TSONG, Institute of Physics, Academia Sinica, Taiwan, R.O.C. — Using a scanning tunneling microscopy, we have observed interesting hydrogen-adsorption induced atomic rearrangements on Pb/Si(111) system at room temperature. A hexagonal ring-like pattern with decaying intensity is formed around the hydrogen-induced point defect. Moreover, interference-like patterns can be seen in the region among the H-induced point defects. The detailed pattern depends on the relative position of defects. With certain relative positions, a new superstructure of hexagonal cells can be seen. The phase boundaries are found to either enhance or suppress the formation of the hexagonal ring-like pattern. We believe that the intricate interplay between atomic displacement and electronic structure causes the formation of the patterns. [Ref] : I. S. Hwang, S. H. Chang, C. K. Fang, L. J. Chen, and T. T. Tsong, Phys. Rev. Lett. 94, 045505 (2005)

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