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Order-disorder phase transition in Fe/Pt(110) CHANYONG HWANG, S.W. HAN, W. KIM, IN-HO LEE, H. KIM, Korea Research Institute of Standards and Science, M. B. HOSSAIN, C.K. KIM, Chungnam National University, Y.P. LEE, Department of Physics and q-Psi, Hanyang University, J. HONG, Department of Physics, Pukyong National University — Order-disorder phase transition in binary alloy has been studied for long time but so far not much microscopic studies on its behavior have been made. The surface of (110) platinum shows missing row structure, which results in (2x1) structure. At room temperature, small amount of Fe overlayers on top of this surface destroys the surface order, while the surface order at low temperature is maintained. This means that the Fe atoms can fill the missing row at low temperature, which results in ordered state of surface alloy. Upon increasing the temperature, this ordered state became disordered. The most remarkable result is that with the atom-resolved STM measurement, we can actually count the entropy of the system, which is important in determining the free energy at this elevated temperature. The importance in magnetic phase in determining the ground state will be discussed. Also the disordering pathway will be shown. Also this order-disorder phase transition has been explained with the Ising model of the spin system in magnetic filed.

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