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Analysis of spin-orbit coupling effects in the Pt-Si nanowires on Si(110) surface SEHOON OH, HYUNGJUN LEE, HYOUNG JOON CHOI, Department of Physics and IPAP, Yonsei University — We study Pt-induced nanowires on Si(110) surface by using an ab-initio pseudopotential density-functional method. A thick slab of Si atoms is considered with Pt atoms added on the Si surface. Atomic structures of Pt-induced nanowires are determined by the total-energy minimization. We calculate surface band structures near the Fermi level and simulate scanning tunneling microscopy (STM) images and angle-resolved photoemission spectra (ARPES). We analyze the effects of the spin-orbit interaction on the electronic structure qualitatively as well as quantitatively. This work was supported by NRF of KOREA (Grant No. 2011-0018306) and KISTI supercomputing center (Project No. KSC-2013-C3-008).

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