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Atomic structure of Holmium (Ho) silicides on Si(111) by low energy electron diffraction (LEED) Patterson inversion at multiple incident angles AI CHI ANGELA LEUNG, HUA SHENG WU, MAO HAI XIE, Department of Physics, The University of Hong Kong, Hong Kong, China — The surface structure of Ho silicide grown on Si(111) has been determined by LEED Patterson inversion at multiple incident angles. The experimental LEED I-V data is inverted as Patterson function. The Patterson inversion gives the inter-atomic distances between all atomic pairs in the structure. Signal from single scattering is enhanced and the multiple scattering is averaged to background so artifact-free Patterson function map can be obtained. It is an accurate and direct method to discriminate the optimum structure from several atomic structural models. For low coverage, about 1 ML, a 1x1 LEED pattern was observed. The preliminary results find that a hexagonal Ho plane is located below reverse buckled Si bilayer. Ho atoms situate on T4 sites above the bulk surface of Si. For higher converages, several monolayers, an r3xr3 LEED pattern was formed. The preliminary result favors that alternating flat layers of Ho and Si are located in between the buckled Si bilayer and bulk Si surface.

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