



Electronic States of Ordered Stacking Faults in Nanostructures Chair: Dr. Tomonobu Nakayama (MANA PI)

Prof. Katsuyoshi Kobayashi

(Department of Physics, Ochanomizu University)

NAMIK

Site

Stacking faults are basic defects in materials, and they have been studied for a long time. However, it seems that the subjects in many studies are their structures and mechanical properties, and the electronic properties have little been revealed experimentally. A reason for the lack of studies may be that stacking faults are defects randomly distributed in materials. The recently fabricated Ag thin films on the Si(111)4 × 1- In surface provide a system suitable for studying electronic properties of stacking faults. Stacking faults are periodically inserted in the thin films, which makes it possible to obtain information on electronic states in the reciprocal space by experimental methods such as the photoemission. In this talk I present a recent theoretical work on the Ag thin films. First I discuss the mechanism of the nearly perfect electron transmission through a stacking fault in terms of the phase of wave functions. Second I present calculated band structures of the Ag thin films and discuss the formation mechanism of the dispersionless bands observed in photoemission experiments. Finally I will mention the twinned superlattice nanowires which have also periodic planar defect structures similar to the stacking fault.

Venue: Seminar Room #431, MANA Bldg. Date: Feb 16th Tuesday Time: 16:00-17:00

Contact: International Center for Materials Nanoarchitectonics (MANA), Nakata (ex. 8806)