

NUSNNI Seminar

Venue: Physics Conference Room, S13-M01-15, Faculty of Science, Faculty of Science

Date: 9 January 2006, Monday

Time: 3:00pm - 4:00pm

Seminar Title I : Enhanced field emission from O₂ and CF₄ plasma-treated CuO nanowires

Speaker : Mr Zhu Yanwu

NUSNNI-Department of Physics, National University Singapore

Abstract

The effects of tetrafluoro methane (CF₄) and oxygen (O₂) plasmas on the morphology and field emission of copper oxide (CuO) nanowires are investigated. The tip diameter of nanowires is found to be reduced and the tips sharpened by both plasmas. Furthermore, O₂ plasma removes the amorphous layer on the surface of as-grown nanowires, while CF₄ plasma treatment deposits a thick amorphous coating which results in a decrease in the surface work function. All these factors contribute to the large enhancement of the field emission performance after the plasma treatment.

Seminar Title II : EXAFS studies of copper oxides using Total Electron Yield detection mode

Speaker : Mr Quek Wee Tong

Department of Physics, National University Singapore

Abstract

Synchrotron x-ray source is employed to examine the Extended X-ray Absorption Fine Structure of a series of copper oxides samples. The samples used were copper (I) oxide, copper (II) oxide, copper (II) oxide nanowire structure film. The results showed that the coordination number and nearest neighbour interatomic distances of the pure oxide samples matched theoretical values. It is also observed that there is a small degree in chemical shift in the K-edge of copper in the various compounds. Finally, using the pure copper(II) oxide sample as a calibration standard, the fine structure in copper(II) oxide nanowire was analyzed. A significant difference in the coordination number leads to the conclusion of a different structure present in the surface of the nanowire.