Electron emission mechanism of Diamond

by Prof. Ken Okano

Date: 15th August 2007 (Wednesday)
Time: 12:00pm to 1:00pm
Venue: EA-06-04 (Seminar Room)

Abstract

Clarifying the electron emission mechanism of diamond is one of the remaining problems for the realization of diamond cold cathodes for vacuum nano-electronics applications. Diamond is well known to have negative electron affinity (NEA) and an electric field of less than 1V/um is required to extract electrons from the surface [1], whereas much higher field is needed for the conventional metal emitter tips. However, there have been only few reports attempting to clarify the mechanism based on the experimental results [2-4]. In this study, a combined spectroscopy of XPS/UPS/FES was performed to characterise the electron emission mechanism of diamond. As a result, we have succeeded in drawing the energy band diagram to explain the electron emission from various types of diamond.

Prof. Ken Okano Speaker

Prof Ken Okano obtained his Ph.D and B.Eng from Tokai University in 1991 and 1986 respectively where he started work and is still working on the fabrication and device testing of semiconducting diamond today. He has published over 70 reviewed articles in the field of semiconductor Diamond and had won Academic Awards. Currently, he is a Professor of Physics at the International Christian University in Tokyo and concurrently, a Visiting Professor at the Japan Advanced Institute of Science and Technology (JAIST). He has several visiting appointments which included Lincoln Lab in MIT and Cambridge University.

Dr Xue Jun Min Host

ALL ARE WELCOME!