
Dynamic Observation of Surfaces and New Development of LEEM/PEEM

Speaker: Professor Takanori Koshikawa
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Venue: Blk S13, #M01-11, Physics Conference Room,
Department of Physics
Faculty of Science, NUS

Date: 25 June 2009 (Thursday)
Time: 3.30 – 4.30pm

Abstract:

A low energy electron microscopy and photo-emission electron microscopy (LEEM/PEEM) are very powerful tools to investigate the surface dynamics and structure analysis and also the versatile equipment using several functions, e.g., micro-XPS, XMDCPEEM, XMLDPEEM, spin-polarized LEEM, laser-excited PEEM and so on.

In the present lecture, the outline of LEEM/PEEM will briefly be described, for instance advantage of LEEM/PEEM, equipment, imaging processes. In the next, two examples of research results will be presented, which clarify the new crystal growth process using dynamic images of LEEM and selected area LEED patterns on Cu and Pb on W(110) surface. New development of highly polarized and bright spin-polarized LEEM (SPLEEM) to observe the magnetic domain will be explained, which has very high performance to enable the dynamic imaging possible even in the magnetic images with new ideas and high qualified technique to make super-lattice semiconductors.

In final, a trial of aberration correction of LEEM/PEEM can be given, which is important for high spatial resolution and higher signal intensity.

For details, please contact:

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About speaker:

1. Name: Takanori Koshikawa
2. Born: 7th Dec. 1945
3. Institution: Fundamental Electronics Research Institute (FERI)
Osaka Electro-Communication University (OECU)
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[Tel:+81-72-824-1131](tel:+81-72-824-1131), Fax: +81-72-825-4590
4. Position: Director of FERI, Professor
5. Education
 - (1) 1971 MS (Appl. Physics) (Osaka University)
 - (2) 1974 Ph.D (Appl. Physics) (Osaka University)
6. Job
 - (1) 1975; Assistant Professor, Osaka Electro-Communication Univ.
 - (2) 1977; Associate Professor, Osaka Electro-Communication Univ.
 - (3) 1982-present; Professor, Osaka Electro-Communication Univ.
 - (4) 1979- 1980, Guest Researcher at Physics Institute, Technical Univ. of Clausthal, West Germany (Supported with Alexander von Humboldt Foundation)
 - (5) 1982, Guest Researcher at Physics Institute, Technical Univ. of Clausthal, West Germany (Supported with Alexander von Humboldt Foundation)
 - (6) 2000- 2004, Director of graduated school of Engineering, OECU
 - (7) 2003-present, Director of FERI, OECU

Research Field

Surface Physics, Surface Analysis, Development of Instruments

*Crystal growth with AES, LEED, LEEM/PEEM, MEIS etc.

*Surface Structure Analysis with LEED, RHEED, MEIS etc

*Sputtering of alloy with AES, SIMS etc.

*Fundamentals of electron and ion scattering in solids, simulation with Monte-Carlo method

Honors

- (1) 2006, Sakaki Award of JSPS Micro-Beam Analysis 141st Committee
- (2) 2007, Best Award of Surface Science Soc. of Japan
- (3) 2007, Fellow of Applied Physics Soc. of Japan
- (4) 2009, Award of the best review paper of Microscopy Soc. of Japan

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Invited talks

Invited from many international conferences and domestic conferences
Activity in the Academic Societies

- (1) 2006-present: Chair of JSPS Micro-Beam Analysis 141st Committee
- (2) 2005: Branch chair of Applied Physics Soc. of Japan
- (3) 1995: Branch chair of Surface Science Soc. of Japan
- (4) 2007-2009: Branch chair and vice-president of Vacuum Soc. of Japan
- (5) Etc.
- (6) Activity in international conferences
- (7) Chair of the organizing committee or steering committee of 10 international conferences so far
- (8) ALC, LEEM/PEEM, IISC, ACSIN, VASSCAA etc.
- (9) (2) Present members of the international advisory board of 5 conferences (ALC, LEEM/PEEM, 3S, IISC, HRDP)

Host by: Assistant Professor Chen Wei