

INSO Summer School 2018, Osaka-Tsukuba

(Summer Lectures in 2018 on Nanotechnology/Nanoscience)

Schedule: Monday, July 30th - Friday, August 10th except on Saturday & Sunday

Let's participate in the original graduate-level lectures on nanoscience and nanoengineering delivered live by three lecturers from top foreign universities!

The Institute for NanoScience Design, Osaka University will invite foreign lecturers from abroad and hold the INSD summer school 2018 on nanoscience and technology, composed of three topics of lectures that are usually taught in topmost foreign universities. The summer school is aimed at fostering international young talent on nanoscience and nanoengineering. This program is shared with University of Tsukuba and connects three campuses, Toyonaka, Suita, and Tsukuba, via video conferencing systems. The lecture documents will be uploaded on URL: <http://www.insd.osaka-u.ac.jp/nano/>.

■**Lecturers:** This year the following three lecturers will offer three topics, one from Osaka and two from Tsukuba.

Prof. Marie D'angelo (Institute for NanoSciences of Paris, Sorbonne University, France), at Toyonaka

Asst. Prof. Venkatesha Rama Hathwar (Center for Materials Crystallography, University of Tsukuba), at Tsukuba

Prof. Henri Mariette and Prof. Etienne Gheeraert (Néel Institute, CNRS and University of Grenoble-Alpes, France), at Tsukuba

*Schedule and abstracts of lectures are on the reverse side. Pay attention to the change of the order and time of each topic.

■**Lecture rooms:** (Toyonaka Campus, capacity: 40) R.N. 305, INSD Seminar Room, 3rd floor of Interdisciplinary Research Building; (Suita Campus, capacity 12) R.N. F390, INSD Satellite Room, 3rd floor of the first research building of Institute of Scientific and Industrial Research. Prof. D'angelo will give a lecture at Toyonaka.

■**Applicants:** Although the priority is given to graduate-school students who take "Graduate Minor Program or Graduate Program for Advanced Interdisciplinary Studies for Education, Research and Training on Nanoscience and Nanotechnology" (hereafter, nano-program) and "Interactive Material Science Cadet Program", there is plenty of room for other domestic and foreign graduate and undergraduate students and staff members to be welcome. Homework and, possibly, a final exam are imposed on those students who desire credits. If possible, the attendants are requested to reply to some questionnaire which would be helpful in improving the summer school.

■**Maximum number of topics and units of credit:** One unit of credit for "International Exchange Lecture on Nano-science and Nanoengineering B or C" is given to those students who complete a series of lectures on one topic. Graduate students can take up to two units of credit. Especially, foreign students desiring to take the nano-program, but being not good at Japanese, are requested to complete two topics in order to transfer two units of credit to the otherwise required module, "Nanotechnology Career-up Lectures for Social, Legal, Ethical Relationship".

■**Deadline and method of application:** Deadline is Thursday, July 26th. Send the following information either in Japanese or in English to the INSD staff who is in charge. E-mail address: nano-program@insd.osaka-u.ac.jp
On-site registration is also possible for those who do not desire credits.

Students: full name, affiliation (graduate school/school, department, D/M/B, school year, affiliated research laboratory), E-mail address, specify whether one takes nanoprogram or not, chosen lecturer's name(s), place of attendance (Toyonaka/Suita).

Other members: full name, affiliation (institution, affiliated research laboratory, position), E-mail address, chosen lecturer's name(s), place of attendance (Toyonaka/Suita).

*If one cannot attend some classes during the series of lectures, please specify the date of absence.

■ Lecture Schedule (94 minutes per lecture)

	7/30	7/31	8/1	8/2	8/3	8/4,5	8/6	8/7	8/8	8/9	8/10
9:00-10:34						OFF				test	
10:45-12:19											
13:15-14:49											
15:00-16:34											

■ Lecturers, and Titles and Abstracts of Lectures

Lectures from Tsukuba

X-ray Scattering and Electron Density Analysis: Methodology and Applications

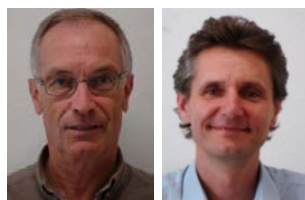
Asst. Prof. Venkatesha Rama Hathwar

(Center for Materials Crystallography, University of Tsukuba)



- X-ray diffraction in crystalline materials.
- Electron density distributions versus chemical and physical properties.
- Electron density analysis applied in chemistry, physics, material science and biology.
- Recent applications in understanding structure-property relationships.

Semiconductors Physics and Engineering, Doping, Defect, Optical Properties



Prof. Henri Mariette and

Prof. Etienne Gheeraert

(Néel Institute, CNRS and University of Grenoble-Alpes, France)

- Introduction and general concepts
- Semiconductor doping by diffusion
- Peculiarities of wide bandgap semiconductors.
- Semiconductor doping by ion implantation
- Basic phenomena in semiconductor optics.
- Elementary electronic devices

Lecture from Toyonaka, Osaka

Introduction to Photoelectron Spectroscopy and Synchrotron Radiation

Prof. Marie D'angelo

(Institute for NanoSciences of Paris, Sorbonne University, France)



- Generalities & technical aspects of photoemission
- Interaction Hamiltonian & transition probability
- Transitions from localized states: core level photoemission
- Band dispersion: Angle-Resolved Photoemission
- X-ray production: comparison of X-ray tubes, synchrotron radiation and Free Electron Laser
- Basics and theory of synchrotron radiation
- New developments in photoemission: time-resolved and near ambient pressure photoemission

■ Organized by the Institute for Nanoscience Design (INSD), Osaka University

Nano-program Office : R.N.303, 3rd floor of Interdisciplinary Research Building, Tel: 06-6850-6398

E-mail: nano-program@insd.osaka-u.ac.jp, Website: <http://www.insd.osaka-u.ac.jp/nano/>