INSD Summer School 2016, Osaka-Tsukuba

(Summer Lectures in 2016 for Nanotechnology/Nanoscience)

Schedule A: Thursday, July 28th - Friday, August 5th except on Sunday

Schedule B: Monday, August 29th – Friday, September 9th except on Saturday and Sunday

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

The Institute for NanoScience Design, Osaka University will invite foreign lecturers from abroad and hold the INSD summer school 2016 on nano science and technology, composed of five topics each having eight or ten lectures that are usually taught in topmost European 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.

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

A: Prof. Ulrike Woggon (Technical University of Berlin, Germany), at Toyonaka, Osaka

Dr. Tristan Cren (CNRS/Institute for NanoSciences of Paris, UPMC (Uiversity of Pris VI), France), at Toyonaka, Osaka

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

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

B: Prof. Christophe Vallée (LTM-CEA/LETI MINATEC and University of Grenoble-Alpes, France), at Tsukuba

*Schedule and abstracts of lectures are on reverse side. Pay attention to the change of the order of topics for Schedule A.

■**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. Woggon and Dr. Cren will give lectures at Toyonaka Campus.

■**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 the credit. 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:** Graduate students can take two topics at most. One unit of credit for "International Exchange Lecture on Nanoscience and Nanoengineering B or C" is given to those students who complete a series of lectures on one topic. 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" in nano-program.

■**Deadline and method of application:** Deadlines are July 21st for Schedule A and August 24th for Schedule B. Send the following information either in Japanese or in English to the INSD staff who is in charge. E-mail address: prasad@insd.osaka-u.ac.jp. On-site registration is also possible for those who do not desire the credit.

Students: full name, affiliation (graduate school/school, department, D/M/B, school year, affiliated research laboratory), E-mail address, specify whether one takes nanoprogram, 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.

■Lectures for Schedule A

minutes per lecture)

Prof. Ulrike Woggon
Dr. Tristan Cren
Prof. Etienne Gheeraert
Prof. Henri Mariette

Time/Date	7/28	7/29	7/30	7/31	8/1	8/2	8/3	8/4	8/5
9:00-10:34				OFF					
10:45-12:19									
12:45-14:19									
14:30-16:04									

Lectures for Schedule B　10:10-11:25, from 8/29 to 9/9 except for 9/3 and 4

■Lecturers and Titles and Abstracts of Lectures

Lectures from Tsukuba

Solid State Diffusion and Wide-gap Semiconductors

Prof. Etienne Gheeraert

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

-Diffusion model of atoms in solid, such as Si, SiC, GaN and diamond
-Diffusion, ion implantation, defect formation and extinction
-Phenomena appearing in fabrication and processing of electronic devices, such as integrated circuits, solar cells, luminescent devices, etc.

Physics and Elaboration of Semiconductor Nanostructures

Prof. Henri Mariette

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

-Fabrication and characterization of semiconductor nanostructures
-Nucleus formation, strain relaxation, surface reconstruction in epitaxial growth
-Characteristic properties of semiconductor low-dimensional nanostructures

Thin Films and Microelectronics (Schedule B)

Prof. Christophe Vallée

(LTM-CEA/LETI MINATEC and University of Grenoble-Alpes, France)

-New materials and development of their processing utilized in microelectronics industry
-Newly developed thin films of insulator
-Plasma-assisted atomic layer deposition and etching

Lectures from Toyonaka, Osaka

Optical Spectroscopy of Nanostructured Materials

Prof. Ulrike Woggon

(Technical University of Berlin, Germany)

- Fundamentals of light-matter interaction - classical, semi-classical and quantum optical description
- Experimental methods of ultrafast and nonlinear spectroscopy (examples)
- Application to semiconductor quantum dots, carbon nanotubes and colloidal nanoparticles

STM and STS Measurements of Emerging Electronic Phenomena in New Correlated Materials and Nanostructures

Dr. Tristan Cren

(CNRS/Institute for NanoSciences of Paris, UPMC (Uiversity of Pris VI), France)

-Principles of scanning tunneling microscopy (STM) and scanning tunneling spectroscopy (STS)
-Basic material science of strongly correlated electron systems
-STM and STS measurements of electronic phenomena in correlated materials and nanostructures

***The programs are subject to change according to the schedule of foreign lecturers.**

■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.sigma.es.osaka-u.ac.jp/pub/nano/