Let's Join International Video Exchange Live Lectures on Nano-Science between OU and UG !!

INSD NanoScience Video Exchange Lectures 2016

The following international video exchange live lectures in English will be held between Osaka University (OU) and the University of Groningen (UG). A couple of one-hour lectures, one from OU and the other from UG, will be given four times. On UG side, there attend the students belonging to the Top Mater Course of NanoScience conducted by *Zernike Institute*. On OU side, not only those Master and PhD students who are registered as the INSD nanoprogram students but also those who are interesting in the lectures are welcome to join the class and discussion. Do not miss such a valuable opportunity! These lectures are the main part of "International Exchange Lectures on Nanoscience and Nanotechnology A" (credit: 1 unit). Please register your name in advance in order to receive the lecture slides. The contact e-mail address is <prasad@insd.osaka-u.ac.jp>.

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Exchange lectures: every Friday from October 14th to November 4th, 2016
Time: 16:00-18:00（10/14, 10/21 and 10/28）and 17:00-19:00（11/4）
Places: (Toyonaka Campus) Satellite Lecture Room 305, 3rd floor, Interdisciplinary Research Building, http://www.osaka-u.ac.jp/en/access/toyonaka/toyonaka.html
(Suita Campus) Room 319, 3th floor, Building R2, Division of Materials and Manufacturing Science, Graduate School of Engineering,
http://www.eng.osaka-u.ac.jp/en/campusmap.html

	Date	time	Lecturers	
1	10/14 (Friday)	16:00-18:00	Nozue, Cordes	Groningen-Osaka Joint Lectures (see next page)
2	10/21 (Friday)	16:00-18:00	Harada, Tobey	Groningen-Osaka Joint Lectures (see next pages)
3	10/28 (Friday)	16:00-18:00	Ito, la Cour Jansen	Groningen-Osaka Joint Lectures (see next pages)
4	11/4 (Friday)	17:00-19:00	Fujiwara, Havenith	Groningen-Osaka Joint Lectures (see next pages)

Grading Policy: Attendance to lectures more than 60% and submission of reports about the summary of two topics out of the eight lectures.

These lectures are the main part of "**International Exchange Lectures on Nanoscience and Nanotechnology A" (credit: 1 unit)** and those students who wish to get the credit are asked to attend additional two exchange lectures which will be held in January, 2017.

大阪大学 OSAKA UNIVERSITY

rijksuniversiteit groningen

INSD NanoScience Video Exchange Lectures (2016, Groningen-Osaka)

These lectures are held as a part of **"Fundamental and functional properties of nanomaterials"** in top Master NanoScience in Groningen and a part of **"International Exchange Lectures on Nanoscience and Nanotechnology A"** of INSD in Osaka. The programs are also shared by University of Science-Malaysia.

The sessions start on the following Friday at 9:00 in the morning (Groningen time), that is, at 16:00 or 17:00 in the afternoon (Osaka time).
[NOTE The Netherlands switches from summer time (day light saving time) to winter time *on the night of 30* ***October (Sun) 01:00 (UTC) 2016***.]

Lecture 1

Friday 14, Oct. 2016

Osaka time: 16:00-18:00
Groningen time: 9:00-11:00

Chair: Prof. Tadashi Itoh

Prof. Yasuo Nozue, Graduate School of Science (speaks 16:00-16:45 (O) / 9:00-9:45(G))
(Field: solid state physics, strongly correlated electrons)
Title: Electrons in periodic nanospaces of zeolites
Abstract: The quantum confinement of electrons has attracted broad interests in the solid state physics. Bulk alkali-metals are of free-electron nonmagnetic metal. Guest alkali-metals loaded into periodic nanospaces (cages with windows) of zeolite crystals, however, display the insulator-to-metal transition and ferromagnetic properties, etc., depending on the three-dimensional array of zeolite cages, the kind of alkali metals and the loading density. These novel electronic properties are explained by the mutual interaction between electrons and the electron-phonon interaction, based on the quantum confinement of electrons in regular nanocages.

Chair: Prof. Thorben Cordes

Prof. Thorben Cordes (speaks 10:00-10:45 (G) / 17:00-17:45 (O))
(Field: single molecule, super-resolution, FRET)
Title: From single-molecule photophysics to super-resolution and optical imaging of nano-structures.
Abstract: In this lecture the basic photophysics of single-molecule compatible fluorophores are introduced in combination with an extension of the classical Jablonski scheme. This lays the groundwork for the use of standard organic fluorophores as "photoswitches" in state-of-the-art super-resolution imaging methods. Working principles and applications of these techniques are shown. Finally, super-resolution imaging is used to characterize a novel bottom-up assembly process (single-molecule) based on the transport of DNA-oligomers with an atomic-force-microscope.
keywords: single-molecule fluorescence spectroscopy, photophysics, super-resolution microscopy, single-molecule, atomic-force-microscopy.

Lecture 2

Friday 21, Oct. 2016

Osaka time: 16:00-18:00
Groningen time: 9:00-11:00

Chair: Prof. Tadashi Itoh

Prof. Akira Harada, Graduate School of Science (speaks 16:00-16:45 (O) / 9:00-9:45(G))
(Field: macromolecules, molecular machines, self-assembly, self-healing)

Title: Macroscopic self-assembly and self-healing through molecular recognition.

Abstract: Macromolecular recognition is classified as main-chain recognition and side chain recognition. Main-chain recognition is involved in the formation of polyrotaxanes in which some cyclic molecules are threaded onto a polymer chain. We have studied on the relative movement of cyclic parts and a linear chain. We can control the rates and the direction of the cyclic parts on a polymer chain. In addition, we have achieved macroscopic self-assembly and self-healing systems through side-chain recognition.

Chair: Prof. Thomas Jansen

Prof. Ron Tobey (speaks 10:00-10:45 (G) / 17:00-17:45 (O))
(Field: Solid state research with ultrafast lasers, generation of THz and soft X-ray pulses)

Title: Elasticity as a control knob of ferroic properties in materials

Abstract: Control of material properties is seen as a key enabler for future technology. In this presentation I will show how strain can be used to control material properties. This topic spans both static control methods, where a built in strain fixes a particular materials property, and more importantly for us, dynamic control methods, where strain waves actively modulate a material property. As an example of this, I will show how sound waves interact with magnetization and provide an outlook for strain controlled phase transitions.

Lecture 3

Friday 28, Oct. 2016

Osaka time: 16:00-18:00
Groningen time: 9:00-11:00

Chair: Prof. Tadashi Itoh

Prof. Syoji Ito, Graduate School of Engineering Science (speaks 16:00-16:45 (O)/ 9:00-9:45 (G))
(Field: laser manipulation, single-molecule detection)

Title: Radiation pressure: a powerful tool to manipulate nanomaterials

Abstract: The lecture starts with the history and principle of optical trapping. It then introduces several important applications of the laser tweezer that includes assembling of nanoparticles, optical sorting of anisotropic nanoparticles, and successful control of UV-induced photopolymerization by radiation pressure

Chair: Prof. Thomas Jansen

Prof. Thomas la Cour Jansen (speaks 10:00-10:45 (G) / 17:00-17:45 (O))
(Field: computational spectroscopy and optical properties)
Title: Real time observation of sub-picosecond dynamics
Abstract: Time resolved laser spectroscopies offers the possibility of observing dynamics in real time on very fast time scales. In this lecture two-dimensional infrared spectroscopy will be introduced. Focus will be on the application to study the reorientational dynamics of organic ions in hybrid solar cell materials. These motions are thought to be involved in the high efficiency of these recently discovered materials. Furthermore, the context hydrogen bond dynamics in water will be discussed, which is of outmost importance in solvation phenomena including the folding of proteins.

Lecture 4

Friday 4, Nov. 2016
Osaka time: 17:00-19:00
Groningen time: 9:00-11:00 (in winter time)

Chair: Prof. Tadashi Itoh

Prof.Yasufumi Fujiwara, Graduate School of Engineering (17:00-17:45 (O) /9:00-9:45(G))
(Field: rare-earth-doped semiconductors, OMVPE growth, LED, luminescence, energy transfer)
Title: Fundamentals of light-emitting diode with rare-earth-doped semiconductors
Abstract: After the groundbreaking invention of blue and green light-emitting diodes (LEDs) employing nitride semiconductors ($In_xGa_{1-x}N$/GaN), there has been a strong demand to develop red LEDs using nitride semiconductors. We have focused on europium (Eu) ions that have been widely used as an activator for red phosphor, and have succeeded in growing Eu-doped GaN (GaN:Eu) layers with high crystalline quality by atomically-controlled organometallic vapor phase epitaxy (OMVPE), as well as developing the world's first red LED that operates at room temperature using GaN:Eu as the active layer. This lecture will cover current status of conventional GaN-based LEDs and the GaN:Eu red LED, present understanding of Eu luminescent sites formed in GaN and future strategies for the improved light output of the LEDs.

Chair: Prof. Thomas Jansen

Prof. Remco Havenith (speaks 10:00-10:45 (G) / 18:00-18:45 (O))
(Field: supra-molecular structure for organic devices)
Title: Supramolecular organization in organic devices.
Abstract: The supra-molecular organization of organic semiconductors in thin films used as active layer of organic devices is fundamental for their performances. In these materials the electronic and optical properties are strongly anisotropic and dependent on the supramolecular arrangement. Therefore it is possible to reveal by optical techniques the supra-molecular organization in thin films of prototype organic semiconductors. Finally, the relation between the supramolecular organization in thin film and the device performances will be discussed.
(The title and abstract of this lecture are subject to change. Please check the following web page afterward. URL: http://www.insd.osaka-u.ac.jp/nano/index.html)