

SUMMER LECTURE in 2015

for Nanotechnology / Nanoscience 2015.7.10ver

Period	2015/7/21 (Tue) – 7/31 (Fri) *Except 7/26 Sun.												
Place	University of Tsukuba, Laboratory of Advanced Research B 0110 →B204 room changed! Osaka University, Suita Campus and Toyonaka Campus												
Objectives	The main objective of the Summer Lecture is to bring students with meaningful contact with distinguished instructors, as well as to provide the fundamentals required for pursuing every-day research on leading-edge nanoscience and/or nanotechnology research. The courses will be given in a similar fashion to those given in the US or EU. Students will be acquainted with the lectures given in English and recognize the level of the graduate studies usually expected at leading universities in the US and EU.												
Lecture Style	<ul style="list-style-type: none"> ●Classes will be given live telecast by Co-host Osaka University. ●Each course consists of 10 lectures (75 min each) including homework and final exam. ●The final exam is given either at the last (10th) meeting or by the form of take-home exam, depending on the instructors. In the latter case, the last (10th) meeting is an ordinary lecture. ●Prospective graduate students from physics, chemistry, materials science, and electrical engineering are encouraged to attend. The contents of each course will not be too specific and the level should be somewhat equivalent to advanced undergraduate courses in Japan. ●Students may officially register as graduate courses at University of Tsukuba (one credit hour for each course is given after successfully passing the exam). Unregistered special student status, with which students do not have to hand in or take the final exam, is also acceptable (the number is limited). 												
Lecturers	Associate Prof. Mogens Christensen (Aarhus Univ.) "Advanced Materials Characterization Using X-ray and Neutron Scattering"												
(Title is tentative)	Associate Prof. Jean-Philippe Attané (Grenoble Alpes Univ.) "Nanomagnetism and Spintronics"												
	Dr. Emmanuelle Lacaze (CNRS/Univ. Pierre et Marie Curie, INSP) "Self-assembly of organic molecules and nanoparticles on substrates"												
	Prof. Thorben Cordes (Zernike Institute, Univ. of Groningen) "Towards optical nanoscopy: advancing laser microscopy"												
Schedule	Time\Date	7/21	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	
	9:15-10:30						OFF						
	10:45-12:00												
	13:10-14:25												
	14:40-15:55												
Office hour and Coffee hour	11:30 - 13:00 Coffee Break and Q&A Hour with Lecturers and TAs (everyone is welcomed!) In front of the Room B204 [room changed]at Laboratory of Advanced Research B, Univ. of Tsukuba												
Registration	Please access and register from "tia-edu.jp" . Thank you.												
Contact	Tsukuba Innovation Arena Promotion Office University of Tsukuba, Tennodai 1-1-1 Tsukuba, Ibaraki 305-8571 Japan Tel: 029-853-8389, 5912 / Mail: tia-edu@un.tsukuba.ac.jp [HP] http://tia-edu.jp/												

Summer Lecture in 2015 for Nanotechnology/Nanoscience Recruitment of Participants

Graduate School of Pure and Applied Sciences, University of Tsukuba and Institute for NanoScience Design, Osaka University jointly hold the Summer Lecture in 2015 for Nanotechnology/Nanoscience as part of development of human resources. We are looking forward to your participation.

Term July 21 to July 31, 2015

Place University of Tsukuba Laboratory of Advanced Research B0110, Osaka University Suita Campus and Toyonaka Campus

Lecturers Dr. Emmanuelle Lacaze (CNRS/ Institut des Nano-Sciences de Paris , Universite Pierre et Marie Curie, France)
Prof. Thorben Cordes (Zernike Institute, University of Groningen, the Netherlands)
Associate Prof. Jean-Philippe Attané (Grenoble Alpes University, France)
Associate Prof. Mogens Christensen (Aarhus University, Denmark)

Targeted Participants Graduate students and adults interested in Nanotechnology and Nanoscience
※With a recommendation letter of your academic adviser, college seniors and students of technical college can attend this course.

Number of Positions Around 30 people (10-day attendance in principle)

Selection Process Registration form screening (In case of too many applicants, we will give priority to graduate students) ※After the application deadline(June 24), a participation confirmation will be sent to all participants by e-mail.

Tuition Fee Free ※At University of Tsukuba site, Welcome Party with Associate Prof. Jean-Philippe Attané and Associate Prof. Mogens Christensen will be held on the evening of July 21; Participation Fee 1,000 yen.

Travel Expenses ■For students out side of University of Tsukuba: Transportation expenses and some assistance for accommodation fee:

As assistance for accommodation, you can stay at Daigaku Kaikan, the accommodation at University of Tsukuba. The first-come, first-served bases. If you would like to make a reservation, please check the box of the Registration form. If you stay at another places (or hotels), 3,000yen/night will be provided later.

■Others : No assistance for travel nor accommodation fee

By your own expenses, you can stay at Daigaku Kaikan at University of Tsukuba, it depends on the room availabilities. If you would like to make a reservation, please check the box in the Registration form.

How to Apply

Access to the URL (http://tia-edu.jp/summer_fes2015/) , and click the “Summer Lecture in 2015”. From the blue button “Registration”, please fill in and submit the form.

Application Period: May 26, 2015 ~ June 24, 2015

For Students Name, Affiliation (University, Major, Field of study, academic year, name of your academic advisor), E-mail address, your objective to attend, you need accommodation service or not.

For Adults Name, Affiliation(company and section name), age, E-mail address, your objective to attend, you need accommodation service or not.

Approval of Credits

Graduate Students (Master's) from outside of University of Tsukuba

University of Tsukuba approves the class subjects (1 credit each) of this Summer School as in regular curriculum of Graduate Schools of master's program; for this reason, the graduate students (Master's) who wish to acquire the credits can take the classes as Exchange Students by obtaining permission from both the university they belong and University of Tsukuba. If you received e-mail notice of participation confirmation and would like to acquire the credits of the class subject, please access to the information at TIA Graduate Summer School URL below.

<http://tia-edu.jp/wp/wp-content/uploads/2015/05/spH27.pdf>

Graduate Students (Master's) of University of Tsukuba

The students who received e-mail notice of participation confirmation and would like to acquire the credits, register class subjects from TWINS by your major field. The credits will be included as completion of requirements of Master's program, but NOT of Doctoral Program.

講義名・講師名	専攻	ナノサイエンス・ ナノテクノロジー	電子・物理工学	物性・分子工学	物理学
ナノテクノロジー特別講義V Associate Prof. Mogens Christensen		02BQ212	01BF295	01BG098	01BC310
ナノテクノロジー特別講義III Associate Prof. Jean-Philippe Attané		02BQ208	01BF293	01BG091	01BC308
ナノテクノロジー特別講義IV Dr. Emmanuelle Lacaze		02BQ209	01BF294	01BG092	01BC309
ナノテクノロジー特別講義I Prof. Thorben Cordes		02BQ207	01BF291	01BG089	01BC306

Schedule from Registration to the last day

DATE	Items
June 24 Wed.	Application deadline ※Orientation meeting will be held. The detail is to be announced.
~July 3 Fri.	An e-mail notice of participation confirmation will be sent from applicants. If you are a confirmed participant, you will have the information as below: ① Application Form for Special Students (Only for Graduate students Master's out side of University of Tsukuba) ② TWINS subjects enrollment info (Only for Graduate students of University of Tsukuba) ③ Application Form for transportation and accommodation support (Only for students) ※You pay first and we will make it up according to the RECEIPT you submit to us.
July 10 Fri.	①Deadline for the request document to University of Tsukuba for Special Students (Only for Graduate students of Master's out side of University of Tsukuba) ②TWINS Input due date (Only for students of University of Tsukuba)
July 21 Tue.	Lectures begin
July 26 Sun.	No lectures
July 31 Fri.	Application deadline for transportation and accommodation fee support(Only for students). ※You pay first and we will make it up according to the RECEIPT you submit to us.

Contact Information

University of Tsukuba, Tsukuba Innovation Arena Promotion Office
tia-edu@un.tsukuba.ac.jp Tel. 029-853-8389, 5912
<http://tia-edu.jp>

Lecture Schedule

	ナノテクノロジー特別講義 V Associate Prof. Mogens Christensen
	ナノテクノロジー特別講義 III Associate Prof. Jean-Philippe Attané
	ナノテクノロジー特別講義 IV Dr. Emmanuelle Lacaze
	ナノテクノロジー特別講義 I Prof. Thorben Cordes

Time \ Date	7/21	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31
9:15-10:30						OFF					
10:45-12:00											
13:10-14:25											
14:40-15:55											

Welcome Party

DATE and TIME : July 21 Tues 17 : 30~possibility of time change ※For participants at University of Tsukuba
PLACE : SOUP FACTORY, café at the first area, building A on the second floor

FEE : 1,000yen

Associate Prof. Mogens Christensen, Associate Prof. Jean-Philippe Attané will join us!

講義概要

Nanomagnetism and Spintronics

[web-casting: Univ. of Tsukuba]



Associate Prof. Jean-Philippe Attané
(Grenoble Alpes Univ.)

半導体ロードマップでも明らかのように、スピントロニクスが集積回路に登場する時代が迫っています。

講義では、スピンを室温でどのように操作するかに関わる基礎的な物理を学びます。まず、ナノ構造体に磁場を印加したときの磁化過程について講義し、次に、ナノ構造体でのスピンの輸送と磁化の関係について講義します。

Advanced Materials Characterization Using X-ray and Neutron Scattering

[web-casting: Univ. of Tsukuba]



Associate Prof. Mogens Christensen
(Aarhus Univ.)

物質の原子配列構造と機能、物性は強い相関を持ち、構造の解明は機能理解と開発に重要な知見をもたらします。

熱電変換材料と磁性材料を対象としたX線および中性子散乱を用いた最先端研究の講義を行います。粉末回折による粒子サイズ決定、反応下でのその場X線回折、全散乱など最先端のX線利用や、組織解析など実用的なX線による研究も紹介します。最終的に中性子を用いた、原子スケールの磁気構造解析、非弾線散乱によるフォノン測定までをカバーする予定です。

Self-assembly of Organic Molecules and Nanoparticles on Substrates

[web-casting: Osaka Uni.]



Dr. Emmanuelle Lacaze
(CNRS/Institut des Nano-Sciences de Paris, Université Pierre et Marie Curie)

基板上的分子やナノ粒子の自己組織化について紹介します。最初に分子集合体の様々な研究手法のうち、特に走査プローブ顕微鏡法について解説します。次に、グラファイト、Au(111)面、MoS₂ 基板上的分子集合体を取り上げ、分子間と分子・基板間の相互作用のバランスでどのような集合体を実現するかをVan der Waals相互作用、さらに水素結合などのより複雑な相互作用も取り入れて考えます。さらに、金ナノ粒子集合体について、プラズマ共鳴に基づく光学的性質の集合化による制御を述べます。時間が許せば、半導体量子ドットにも触れます。

Towards Optical Nanoscopy: Advancing Laser Microscopy

[web-casting: Osaka Uni.]



Prof. Thorben Cordes
(Zernike Institute, University of Groningen)

光学顕微鏡でナノスケールの解像度を実現するための各種の手法とそれを使った様々な光学測定の実例について紹介します。

最初に光学顕微鏡の分解能とコントラストについて議論し、次に蛍光顕微鏡、共焦点顕微鏡、非線形光学顕微鏡の原理を解説します。引き続き、動的蛍光イメージング、単分子検知、バイオロータリーモータなどの蛍光観察、ナノスケールの蛍光エネルギー移動などを紹介します。さらに昨年度のノーベル化学賞の対象になった各種の超解像顕微鏡法の原理と測定例、解析方法などを紹介します。併せて、各所で論文紹介を交えて議論を行う予定です。

※Program contents might be changed which please be noted. Thank you.