



TIA GRADUATE SCHOOL SUMMER OPEN FESTIVAL 2017

## Summer Lecture in 2017 for Nanoscience/Nanotechnology Recruitment of Participants

The Graduate School of Pure and Applied Sciences, University of Tsukuba and Institute for NanoScience Design, Osaka University will jointly hold the Summer Lecture in 2017 for Nanoscience/Nanotechnology as part of the development of human resources. Lectures will be relayed by TV conference system between Tsukuba and Osaka.

We are looking forward to your participation.

**Dates** July 24 to August 3, 2017 (10 days: No lecture on July 30 Sun.)

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

**Lecturers** ▪ Prof. Etienne Gheeraert “**Ion Implantation in Solids**”

(Institut Néel, CNRS/University of Grenoble-Alpes, France), Offered from Tsukuba

▪ Prof. Henri Mariette “**Wide Bandgap Semiconductors and Low Dimensional Nanostructures**”

(Institut Néel, CNRS/University of Grenoble-Alpes, France), Offered from Tsukuba

▪ Prof. Masashi Watanabe “**Transmission Electron Microscopy – Fundamental Principle and Applications to Materials Science**” (Lehigh University, USA), Offered from Osaka

▪ Dr. Catherine Gourdon “**Nanophotonics and Spintronics**”

(Pierre and Marie Curie University-Paris6, France), Offered from Osaka

**Targeted Participants** Graduate students and professionals interested in Nanotechnology and Nanoscience

**Note:** With a recommendation letter from your academic adviser, college seniors and students of technical colleges can attend this course.

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

**Selection Process** Registration form screening (In case of oversubscription, we will give priority to graduate students) **Note:** After the application deadline (June 26), a participation confirmation will be sent to all participants by e-mail (June 29).

**Tuition Fee** Free **Note:** At the University of Tsukuba venue, Welcome Party will be held at 26<sup>th</sup> July in the evening. Fee of Welcome Party (1000 yen) will be charged if you wish to join the party.

### Travel Expenses

■ **For students not from the University of Tsukuba:** Transportation expenses and some assistance for accommodation fee: As assistance for accommodation, you can stay at Amakubo-accommodation, at University of Tsukuba. The first-come, first-served basis. If you would like to make a reservation, please check the box of the Registration form. If you stay at another hotels, a part of accommodation fee will be provided later.

■ **Others :** No assistance for travel expenses or accommodation fee, \*By your own expenses, you can stay at Amakubo-accommodation at University of Tsukuba, it depends on the room availability. If you would like to make a reservation, please check the box in the Registration form.

**Note:** Young researchers from CUPAL\* can be provided the same assistance as students above.

\*Summer lectures are also held as the program of Nanotech Career-up Alliance (CUPAL) which is “The construction project for the consortium of the fostering science and technology personnel” subsidized by Ministry of Education, Young researchers from CUPAL can be provided the assistance from this project. Refer to the following site for the details of CUPAL: <https://nanotechcupal.jp/>

### How to Apply

Access the URL ([https://tia-edu.jp/summer\\_fes2017/](https://tia-edu.jp/summer_fes2017/)), and click the “Summer Lecture in 2017”.

From the “Application”, Click [Here](#), you can access to the application form, please fill in and submit the form.

**Application Deadline: June. 26. 2017**



## Approval of Credits

### Graduate Students from outside of the University of Tsukuba

University of Tsukuba approves the class subjects (1 credit each) of this Summer School as in the regular curriculum of Graduate program; for this reason, the graduate students who wish to acquire the credits can take the classes as Exchange Students by obtaining permission from both their university and University of Tsukuba. If e-mail notice of participation confirmation received and would like to acquire the credits of the class subject, refer to the page of Summer Lecture in 2017, "Acquire the credits" .

### Graduate Students of University of Tsukuba

The students who received e-mail notice of participation confirmation and would like to acquire the credits, register class subjects in TWINS by your major field. The credits will be included as completion of requirements of \*Graduate program. \*For later period of graduate program (Docotor' s course), only the students of Nanoscience/Nanotechnology major, can acquire the credits.

Classes and Lecturers	Majors	Nano-science and Nano-technology	Applied Physics	Materials Science	Physics
Advanced Nanotechnology I Prof. Masashi Watanabe		02BQ207	01BF291	01BG089	01BC306
Advanced Nanotechnology II Dr. Catherine Gourdon		02BQ210	01BF292	01BG090	01BC307
Advanced Nanotechnology III Prof. Etienne Gheeraert		02BQ208	01BF293	01BG091	01BC308
Advanced Nanotechnology IV Prof. Henri Mariette		02BQ209	01BF294	01BG092	01BC309

### Schedule from Registration to the last day

Date	Items
June 26 Mon.	Application deadline ※Orientation meeting will be held. The detail is to be announced.
June 29 Mon.	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 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 3 Mon.	Deadline for the request document to University of Tsukuba for Exchange Students (Only for Graduate students out side of University of Tsukuba)
August 3 Thu.	TWINS Input due date (Only for students of University of Tsukuba)
July 24 Mon.	Lectures begin
July 30 Sun.	No lectures
August 3 Thu.	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. 029-853-4028, 8389  
<http://tia-edu.jp>

## Lecture Schedule

	Advanced Nanotechnology I <b>Prof. Masashi Watanabe</b>
	Advanced Nanotechnology II <b>Dr. Catherine Gourdon</b>
	Advanced Nanotechnology III <b>Prof. Etienne Gheeraert</b>
	Advanced Nanotechnology IV <b>Prof. Henri Mariette</b>

Time \ Date	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	8/1	8/2	8/3
9:00-10:34							OFF				
10:45-12:19											
13:15-14:49					※						
15:00-16:34					※※					★	★

Attention!! Irregular time!  
※12:45-14:19※※14:30-16:04

Attention!! Irregular time!  
★16:10-17:44

## Welcome Party ※For participants at University of Tsukuba

**DATE and TIME** : July 26 Wed. 17 : 30~ possibility of time change

**PLACE** : SOUP FACTORY, café at the first area, building A on the second floor

**FEE** : 1,000yen

Prof. Etienne Gheeraert and Prof. Henri Mariette will join us!

## Abstract

### Ion Implantation in Solids

#### Prof. Etienne Gheeraert

(Institut Néel, CNRS /  
University of Grenoble-Alpes, France)



[\[web-casting: Univ. of Tsukuba\]](#)

- Physics of ion stopping
- Nuclear and electronic stopping
- Implantation profile,
- Implantation defects, annealing,
- Transient Enhanced Diffusion

### Transmission Electron Microscopy - Fundamental Principle and Applications to Materials Science

#### Prof Masashi Watanabe

(Dept. of Mater. Sci. & Eng.,  
Lehigh University, USA)



[\[web-casting: Osaka Uni.\]](#)

- Basic concepts of TEM instrumentation
- Electron scattering and diffraction
- Image formation in TEM
- Analysis in TEM
- Advanced topics and applications of TEM

### Wide Bandgap Semiconductors and Low Dimensional Nanostructures

#### Prof. Henri Mariette

(Institut Néel, CNRS /  
University of Grenoble-Alpes, France)



[\[web-casting: Univ. of Tsukuba\]](#)

- Introduction to the various semiconductor materials.
- Peculiarities of wide bandgap semiconductors.
- Basic phenomena in optics
- III-Nitrides polaritonics
- Light Emitting Diodes with nitrides
- Nucleation and growth
- Application to epitaxy of low dimensional structures

### Nanophotonics and Spintronics

#### Dr. Catherine Gourdon

(CNRS/Institute for NanoSciences of Paris,  
University Pierre and Marie Curie, France)



[\[web-casting: Osaka Uni.\]](#)

- Magneto-optical effects: Kerr, Faraday and Voigt
- Magnetism: basics, magnetic domains, domain walls, periodic patterns, spin waves
- Magneto-optical imaging
- Spin dynamics probed by time-resolved magneto-optical effects
- Brillouin light scattering and spin waves

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