

## Molecular Imaging by Optical Microscopy

**5-6 July 2018, 10:00-16:00 hrs.**

Vrije Universiteit Amsterdam, Faculty of Science, W&N building; room S-631  
De Boelelaan 1081 or 1085, 1081 HV Amsterdam

### Content

A two-day MSc+ level course on the latest optical spectroscopy tools for the (bio)chemical characterization of surfaces and entire objects. Imagine, you bring your sample to a machine like a classical microscope, but now you also get all the chemical information from the features you can see.

Spatially-resolved chemical information from sample objects is crucial for the characterization and understanding of dynamic systems in living cells, in (bio)catalysis, in microbiology, but also in plants, foods, forensics, conservation of art, etc. In this course, following a rapid recall of the basics, you will get insight in the principles and applications of the latest optical imaging tools from leading scientist in the field. The course format comprises lectures, problem solving and demonstrations (lab tour). The course is given in English.

### Topics

- Introduction to electronic and vibrational spectroscopy
- Introduction to microscopy
- Modern fluorescence spectroscopy and imaging (including single-molecule and super-resolution techniques)
- Modern IR and Raman spectroscopy and imaging (including depth Raman, tip-enhanced Raman and Stimulated Raman scattering microscopy)
- Laserlab Tour

## Lecturers

*Vrije Universiteit Amsterdam: Dr Freek Ariese,*  
 Associate Professor at the LaserLab of VU Amsterdam



Ariese studied chemistry at the University of Amsterdam and obtained his PhD at Vrije Universiteit Amsterdam in 1993 for his research on fluorescence spectroscopy under cryogenic conditions (Shpol'skii spectroscopy). After his PhD Ariese worked at Iowa State University (USA) and after his return to the Netherlands at the Institute for Environmental Studies (IVM-VU).

Since 1999 Ariese has been working at VU LaserLab on fluorescence and Raman spectroscopy, including Raman microscopy and time-resolved Raman methods. He teaches various spectroscopic courses at the bachelor, master and PhD level, and is involved in the management of LaserLab VU. He was also visiting professor at the Indian Institute of Science in Bangalore, working - of course - on Raman spectroscopy.

*Vrije Universiteit Amsterdam: Prof. Dr. Ir. Erwin Peterman*  
 Professor in Physics of Living Systems, and director of LaserLaB Amsterdam

Peterman teaches several courses at the bachelor and master level to students in Physics, Medical Natural Sciences, and Biomolecular Sciences. Currently, he is director of LaserLaB Amsterdam, the institute of Lasers, Life and Biophotonics. Current research focuses on the cooperation of motor proteins in intracellular transport in *C. elegans* cilia, on the mechanics of DNA and DNA-processing proteins, on the dynamics of membrane proteins in living bacteria, and on the development of new instrumentation and approaches to study life at the single-molecule level. In 2013, he was appointed as full professor on a University Research Chair.



## At the end of the course

The students will have a good overview of possibilities and limitations of the latest optical and chemical 'microscopy' tools for the analytical characterization of dynamic systems in the life sciences, but also in forensics, conservation of art, etc.

## Course duration and time investment

Course duration: 2 days, 10:00 - 16:00  
Participant's investment: 2 days

## Extra Information

This course is taught as a Summer Course in the MSc+ program and is taught every two years.

Course fees:

- €800 (ex. BTW/VAT) per day
- COAST members pay a reduced fee of €400 per day (ex. BTW/VAT) or use a wildcard
- ASTP / MSc+ students: Free

Special fees can be offered to PhD students and companies registering for three or more persons.

Please contact us for more information: [secretary@ti-coast.com](mailto:secretary@ti-coast.com)

## Registration

To register fill out, sign and email the form attached to [lifelonglearning@ti-coast.com](mailto:lifelonglearning@ti-coast.com) .

## Registration Form

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Name	
Organization	
Address	
Billing address (if different from above)	
Educational background	
Email address	
Phone number	

### I will attend on the following date(s):

- Day one: 5 July, 10:00 - 16:00  
 Day two: 6 July, 10:00 - 16:00

### Payment

- I will pay the full course fee of €800 per day (ex. BTW/VAT)  
 I qualify for 50% discount, because my employer is a COAST participant, and will pay €400 per day (ex. BTW/VAT)  
 I am a PhD student and will pay €400 per day (ex. BTW/VAT)  
 I am a PhD student from a group participating in COAST and will pay €200 (ex. BTW/VAT) per day  
 I have received a wildcard from: ..... Therefore, I will follow this course for free (note: this person must receive a copy of your registration mail, to indicate approval)

Date:

Place:

Signature:

To register, please email the duly signed registration form to [lifelonglearning@ti-coast.com](mailto:lifelonglearning@ti-coast.com)