Life science and IR Micro-Spectroscopy thematic school

About

The school covers a comprehensive training in synchrotron infrared spectroscopy and imaging for life-science applications, to train Middle East researchers who will benefit from the techniques that will become available at the SESAME InfraRed beamline.

Within the OPEN SESAME project (www.opensesame-h2020.eu) INFN (Istituto Nazionale di Fisica Nucleare, www.infn.it) and the INFN-LNF DAFNE-Light Synchrotron radiation facility (https://web.infn.it/Dafne_Light/), are offering 20 full grants for a dedicated training programme open to young researchers from the SESAME Members (Cyprus, Egypt, Iran, Israel, Jordan, Pakistan, the Palestinian Authority and Turkey) to strengthen the role of SESAME in the region.
This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 730943, 'OPEN SESAME'.

The school will take place in Amman, April 15-19 2018 and the programme includes a number of learning sessions, both theoretical and practical, run by top scientists working in European Synchrotron beamlines and international research infrastructures.

Participants will explore and develop a range of key practices, capabilities and skills associated with the use of an infrared synchrotron beamline, including sampling techniques, sample preparation and data handling.

Program

The course covers a comprehensive training in infrared spectroscopy and imaging.
There will be five morning theoretical sessions where the basic principles of synchrotron radiation FTIR (Fourier-Transform InfraRed) microscopy and imaging will be discussed, with a focus on the different sampling techniques (transmission, reflection, transflection, attenuated total reflectance), and different type of biological sample (cells, tissues, biofluids) that can be studied.
For each sample type, the training will cover all the experimental steps, from sample preparation (sample handling and preparation protocols, tissue cryo-sectioning, cell growth and deposition, fixation protocols) to spectra acquisition and data analysis (data preprocessing, multivariate analysis).
Afternoons will be dedicated to *hands-on* sessions at the IR beamline, where students will be divided in small groups for practical training on the beamline instrumentation and acquisition software. Data analysis groups will work in parallel on multivariate methods for data handling.

Draft of the scientific program and session planning:

	Sun. 15	Mon. 16	Tues. 17	Wed. 18	Thurs. 19
Morning (Theory)	Official opening	Cell spectroscopy	Cell spectroscopy	Tissue imaging	Biofluid analysis

	General introduction: Principles of FT-IR microspectroscopy and imaging	Cell growth and sample preparation protocols	*In vivo* vs *In vitro*: microfluidic devices	Tissue sectioning and fixation	Multivariate analysis
	Synchrotron radiation vs laboratory sources	Multivariate analysis	Multivariate analysis	Image analysis algorithms;	Concluding remarks
	Sampling techniques			Case study	
Afternoon (hands-on)	Laboratory training groups: spectroscopic software	Laboratory training groups: cell spectroscopy	Social event	Laboratory training groups: tissue imaging	
	Data handling	Data handling		Data handling	

Application Procedure

Interested candidates, typically Master and possibly PhD in physics, chemistry or biology, from SESAME Members (Cyprus, Egypt, Iran, Israel, Jordan, Pakistan, the Palestinian Authority and Turkey) who wish to apply should submit to ftirschool_opensesame@lists.lnf.infn.it, no later than **15 December 2017 (deadline postponed)**, the application form and the following documents:

- A one-page motivation letter explaining why he/she would like to participate in the training
- A biography/CV giving a complete account of his/her educational and professional background
- Two letters of recommendation from his/her supervisor including a statement about his/her English language masteringa

Selection will be made by an international committee within the H2020 OPEN SESAME project consortium based on the candidates' professional background and accomplishments, their motivation and the relevance of their present and/or future work at SESAME, with careful consideration given to gender balance and institutional/regional/national representation.
20 full grants (travel and accommodation) from the H2020 OPEN SESAME project will be offered to successful candidates to allow them to attend the school. The attendance of further participants may be permitted if their travel and accommodation are covered by their own funding sources.

Organizer and Contacts:

INFN contact persons:
Mariangela Cestelli Guidi (chair) ftirschool_opensesame@lists.lnf.infn.it

SESAME contact persons:
Greta Facile (User Office) greta.facile@sesame.org.jo
Gihan Kamel (SESAME IR beamline scientist) gihan.kamel@sesame.org.jo

APPLICATION FORM:

Title (*)	◯ Dr. ◯ Ph.D. ◯ M.Sc. ◯ Other
If "other", enter your title here	
First Name (*)	
Second Name	
Last Name (*)	
Nationality (*)	
Institution (*)	
Address	
Telephone number	
E-mail (*)	
Gender (*)	◯ Male ◯ Female
Current position (*)	☐ Postdoctorate ☐ PhD student ☐ Master student ☐ Other
If "Other", write your position here	
Would you like to be considered for funds? (*)	◯ Yes ◯ No
Do you have previous experience with FTIR spectroscopy?	◯ Yes ◯ No
Will you bring your laptop? (*)	◯ Yes ◯ No

(*) Mandatory fields