

OPEN SESAME



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AfLS2 Conference, Accra



Rough guide to SESAME



First official users July 2018 – Kirsi Lorentz & team



What is "OPEN SESAME"?



"To support SESAME in training for the storage ring and beamline instrumentation technology, research techniques and administration for optimal use of a modern light source facility."

• Horizon2020 European Grant



- Funding of 2.0M€
- 3 years starting January 2017 to Dec 2019
- 11 partners including SESAME itself



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Who is "OPEN SESAME"?









- 1) SESAME staff training and exchange programme.
- 2) Building user capacity in the Middle East.
- 3) Integration into public and socio-economic landscapes.



To train SESAME staff in the storage ring and beamline instrumentation technology, research techniques and administration for optimal use of a modern light source facility.



65 staff exchanges planned across the 3 years: 39 from SESAME to EU and 26 from EU to SESAME





Beamline techniques and operationSOLEIL (lead), ALBA, ELETTRA, INSTRUCT



Machine commissioning and reliable long-term operation
SOLEIL (lead), ALBA, ESRF, ELETTRA, INFN



General technical skills required for the beamlines detectors, electronics, X-ray optics, cryogenics, mechanics, data • ESRF (lead), SOLEIL, DESY



Safety - general and radiation safety zALBA (lead), ESRF, INFN



SESAME User Office and communications

• ELETTRA





INITIAL SCHEDULE

The staff exchanges are scheduled to maximum impact to SESAME and its operation, linking closely the programmed <u>BLs</u> <u>commissioning</u> and <u>staff</u> <u>recruitment.</u>



68 visits to date, on 47 missions 48 on 33 missions planned for 2019



Beamline Techniques and Operation





Machine Commissioning and Long-Term Reliable Operation





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ALBA 19-27/02/18 Moh'd Refifan Saleem Amro and Ali Kamel Hmoud Adayleh (experts from the Jordanian radiation safety, EMRC)

To visit a synchrotron facility site; to overview ALBA's regulation and licence procedures, safety management plan and safety related documents.

Safety





Communication and User Office





To build-up human capacity in SESAME Region researchers to optimally exploit SESAME's infrastructure.



Thematic schools for over 100 researchers from the SESAME Region, and Master and PhD training visits (1-3 months in EU facilities)



Four 1- week thematic schools targeting the day one SESAME beamlines. 20 funded participants.

Biological and biomedical applications. INFN. (IR micro-spectroscopy). Study of tissues and individual cells, provides information on biochemical changes based on the functional groups which can be identified and imaged. 14-19 April 2018, Amman.





Fou



Ancient materials Training school

14 - 18 May Nicosia, Cyprus

Cultural heritage. IPANEMA-CNRS-SOLEIL. (IR, XRPD and XAFS/XRF). The Middle East has a highly significant cultural heritage with a special place in human history, offering a wide range of opportunities for scientists in the SESAME Members to use light source techniques. 14-18 May 2018, Cyprus.





2: Building user capacity in the Middle East



Structural biology. Instruct. (Technique to be treated will be MX, structural biology). A special emphasis for MX applications will be placed on drug discovery, offering the opening for industrial interest. **SUMMER 2019, PLUS SPECIAL "Remote Access" workshop at Weizmann.**





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Environmental sciences. ELETTRA. (XAFS/XRF, XRPD and IR). Element and chemical speciation which is highly relevant for several areas including pollution analysis, recycling, and raw material production (mining). **AUTUMN 2019.**

2: Building user capacity in the Middle East

Tailored HERCULES School for the Middle East. SESAME-ESRF.

Two week school teaching basics of synchrotron radiation and the applications related to the seven Phase 1 SESAME beamlines. Including two days of hands-on work at SESAME. 20 fully funded participants.

26 Oct - 7 Nov 2019

HERCULES @SESAME

26 October - 7 November 2019 @ SESAME (Amman, Jordan)

A two week course to train young researchers on the theory, techniques and applications of synchrotron radiation in the fields of Material Science, Cultural Heritage, Biomedicine, Structural Biology and Environmental Studies.

Includes lectures, tutorials and practicals (in small groups) covering the following techniques:

- X-ray absorption spectroscopy
- Infrared spectroscopy
- Soft X-ray spectroscopy
- Powder and single crystal diffraction
- Macromolecular crystallography
- Small-angle X-ray scattering
- X-ray imaging & tomography

For more information visit www.opensesame-h2020.eu/3658





his event is upported by PEN SESAME which receives unding from the European Union's Horizon (c20 research and Innovation roogramme (c)rant n. 730943)



Short term fellowships at European facilities. ALBA. Bursaries for full-funded short term stays (1-3 months) at OPEN SESAME participants for Master and PhD students registered at higher education institutes of SESAME Members. Research linked to the first beamlines of SESAME. Two calls with nine students per call. SUMMER 2017 & SUMMER 2018.

Bursary awarded:

- 5 x Iran
- 7 x Pakistan
- 4 x Egypt
- 1 x Turkey
- 1 x Palestine
- 11 x Woman, 7 x Men, 1 x Baby
- ALBA, DESY, ESRF, SOLEIL, ELETTRA



<u>Techniques:</u> macromolecular crystallography (MX); micro computed tomography (μ-CT); X-ray powder diffraction (HRPD); X-ray absorption spectroscopy (XAS); synchrotron infra-red microspectroscopy (SIRMS), photoemission electron microscopy (PEEM)

2: Building user capacity in the Middle East

Workshop on synchrotron light applications for industry, focussing on the SESAME Phase I and Phase II beamlines. ESRF.



28 & 29 October 2019 @ SESAME (Amman, Jordan)

SESAME's 1st Industrial & Applied Science Workshop is a two-day event for Industry and Applied Scientists to discover the unique capabilities that the SESAME light source offers.

Includes discussions with expert scientists from SESAME, presentations from industrial scientists and visits to the SESAME light source. The workshop will showcase applications in the following fields:

- Pharmaceuticals
- Catalysis & Chemistry
- Renewable Energy & Energy Storage
- Petrochemicals
- Metallurgy
- Engineering
- Aerospace & Automotive

Funding is available for 20 participants. For more information please visit us at www.opensesame-h2020.eu/3656





This workshop is supported by OPEN SESANE Which receives funding from the European Union's Hort 2020 research and hinows programme (grant n. 2020)



THE CYPRUS

2: Building user capacity in the Middle East



All training material are being made available at: www.opensesame-warehouse.org





To train SESAME staff and its user community in public outreach and corporate communications, and to support SESAME and its stakeholders in **building** awareness and demonstrating its socio-economic impact to assure longer term exploitation.



Communications/media training for SESAME staff and users; Outreach roadshow; Research infrastructure management training for 15 administrators from SESAME Members



Develop a strategic communications plan for SESAME. **CERN.** Provide communications and outreach tools and actions, equipping SESAME with its own communications and outreach capacity. Journalist trips to SESAME

A pilot film made by Bedlam Productions on SESAME to be used to attract major TV broadcasters to finance a full documentary.







Develop a strategic communications plan for SESAME. CERN. Provide communications and outreach

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A pilot film made by Bedlar used to attract major TV br documentary.









Herwig Schopper and Mahmoud Abdellatief at Annual Geneva Philanthropy meeting





an. Jordan ur outside Amman







Communications and Media training. CERN. A communications workshop at a SESAME User Meeting open to all attending users. And media training 1:1.



3: Integration into public and socio-economic landscapes



Raise awareness in the SESAME Members to highlight the regional role of SESAME as a driver for scientific and technological development. One roadshow in each SESAME Member targeting scientific communities and university students. **CYPRUS INSTITUTE.**



Training and networking programme for young research administrators and managers

Dedicated training and networking for young people involved in planning, operating and administrating science supporting processes in the Middle East. DESY.

Focus on the next generation of science administrators at research institutions, universities and funding agencies closely linked to SESAME, encompassing all of the Regional stakeholders.

Two training modules (held in Cyprus and Turkey), each of four days for 15 participants made by nomination through each of the SESAME Members. **First in SUMMER 2018.**

"REALISING AND MANAGING INTERNATIONAL RESEARCH INFRASTRUCTURES"

RAMIRI aims at training the next generation of global research infrastructure managers



Module 1: Courses in Cyprus – 7- 10 May 2018 at the Cyprus Institute (Cyl)

Торіс	Content	
Research Infrastructures and their Role in the Science System	Fundamentals, definitions and principles; life cycle of RIs from design to decommissioning	
Long-Term Sustainability of Research Infrastructures	Pre-conditions for long-term sustainability (innovation potential, data, skills, governance and funding, international outreach)	
Socio-Economic Environment of Research Infrastructures	Impacts of RIs on science, economy, society/public	
Governance and Organisation	Organisational structure and design, mission and vision, peer review, technical evaluation, open access, proposal system	
Interactions with Users	User communities, user offices, integration of users into RI strateg	
Raising Awareness/Outreach	Identification of relevant stakeholders, target communication to different groups, communicating value creation and impact	
Strategy Processes & Road Mapping	Introduction to elements of research strategy, examples of roadmaps: EU, ESFRI ¹ , Asia, US	
Innovation & Technology Transfer	Industrial synchrotron usage, technology transfer via procurement, intellectual property rights	

Module 2: Courses in Turkey - 8 - 11 October 2018 in Izmir, Turkey

Торіс	Content	each
Project Management	Project planning, risk management, change management	through
Human Resources	Recruitment, career development, mobility, equal opportunities, diversity	2018
Finances	Estimating, costing and budgeting; funding sources and financial instruments, EU funding opportunities	2010.
Data management	Open data management policy, FAIR ² data principles	



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RAMIRI aims at training the next generation of global research infrastructure managers

research administrators and managers



OPEN SESAME core gang: activity leaders and deputies





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Further support all opened end 2015



(a) Research and Innovation actions for the 2018 deadline

The objective of this sub-topic is to support the development and installation of a dedicated beam-line in SESAME. The proposal should help strengthening the links to the European network of analytical facilities with particular reference to new synchrotrons currently under development. The consortium will work with the SESAME Scientific Advisory Committee to define the scope of the beam-line more appropriate for the scientific community of reference. It should involve European partner laboratories having similar energy and technical



framework conditions on issues such as access, data management, IPR are not systematically taken into account when interacting with third countries.

81 "New frontiers in science diplomacy" (2010), The Royal Society

H2020 GRANT BEATS – BEAMLINE FOR TOMOGRAPHY AT SESAME















- Horizon 2020 European Grant (822535)
- Funding of 5.97 M€
- Project start: 1 January 2019
- Coordinator: ESRF

Photo: P. Goetgheluck



Vincent Fernandez with burrow fossil on ESRF-ID19





Pave the way for an efficient and sustainable operation of the SESAME research infrastructure

• Develop and consolidate the scientific case and the science community

- Cultural Heritage, Archaeology, Environmental and Materials Sciences

• Design, procure, construct, and commission a beamline for hard X-ray full field tomography at SESAME

- comprehensive know-how transfer to SESAME staff

Foster collaborations among the project partners

 comprehensive know-how transfer to SESAME staff

• Address the issue of sustainability of operation

- medium- to long-term funding scenarios for the facility



Next steps:

- Define X-ray source
- Identify / Interact with User Community
- Technical Design of the BEATS beamline

Timeline:

- Source type and design by April 2019
- Conceptual Design Report to be discussed with users: Summer 2019
- Technical Design Report by Autumn 2020

Note:

Kickoff Meeting to be held in Jordan: 12./13. March 2019 Contact: A. Kaprolat (axel.kaprolat@esrf.fr)













• 3 training schools have been carried out:

14-19 April 2018: Life Science and Infra-Red Microscopy Thematic School held at SESAME

7-10 May 2018: First Module of Training Programme for Young ResearchAdministrators and Managers hosted by The Cyprus Institute13-18 May 2018: Ancient Materials Training School hosted by The Cyprus Institute

• 1 workshop has been completed:

14-18 May 2018: OPEN SESAME/Instruct-ERIC workshop on "Remote X-ray Data Collection from European Synchrotrons" at the Weizman Institute of Science

- **81 participants** have attended the Workshops and Schools
- **54 staff on training missions** for SESAME staff training needs
- **9 bursaries have been attributed to young researchers** from the Middle East in the first call for Fellowships