Short-term Training for technical staff and scientists

Optical and Thermal Characterisation of Solar Receivers/Reactors in High-Flux Solar Simulators

Location:	**IMDEA Energía** Instituto IMDEA Energía, Avenida Ramón de la Sagra 3, 28935 Móstoles, Madrid, **SPAIN**
Date:	***21th September 2023 in person***
Target group:	The course is designed for engineers, researchers and representatives from European CSP industry and companies who want to be trained on real CSP hardware
Course Language:	English
Trainers:	Scientists and Specialists from IMDEA Energy and external parties
Objective:	This course focuses on optical and thermal characterisation and measurements of solar receivers and reactors in high-flux solar simulators. The training consists of both theoretical and practical modules. The training will include visits to the solar simulators at IMDEA Energy Institute, including the High-Flux Solar Simulator (KIRAN-42), and also the laboratory facilities of the institute. All the activities, theoretical and experimental training, are within the scope of the following topics: • High flux solar simulators: overview, technology and applications • Optical characterisation: overview and technology • Thermal characterisation: overview and technology • Solar receivers and reactors technologies and applications • Application of high flux solar reactors for characterisation of solar receivers and reactors • Practical test cases
Application:	The **registration deadline is August 18th, 2023**. Eligible candidates will be informed until August 31st, 2022.
Fees:	No course fee is applicable. Accommodation and travel costs shall be covered by the participant. Lunch is offered by IMDEA Energy.
Contact:	José González-Aguilar (IMDEA Energy), Tel.: +34 917 371 136, E-mail: jose.gonzalez@imdea.org
Participation:	To apply, please fill out the application form here found on SFERA III website and send it to: jose.gonzalez@imdea.org

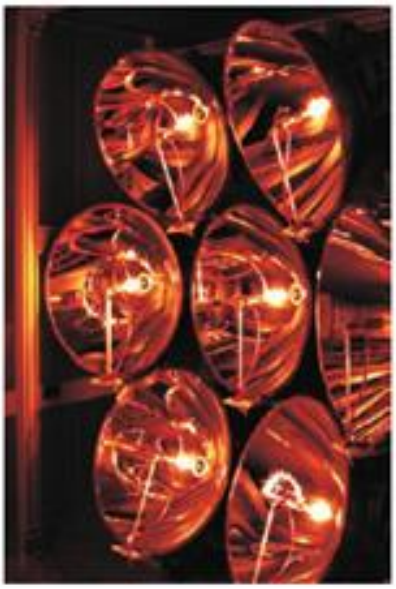
The EU-funded research project - SFERA III - aims to boost scientific collaboration among the leading European research institutions in solar concentrating systems, offering European research and industry access to the best research and test infrastructures and creating a virtual European laboratory. Grant agreement 823802, funded under H2020-INFRAIA-2018-1.

About the Lab & Test Field

KIRAN-42 is a unique R&D experimental facility in Spain, aimed at conducting high flux/high temperature solar thermal, photovoltaic and thermochemical research. It is capable of supplying high-power density beams, with similar characteristics to those commonly used in concentrated solar energy environments, in well-controlled and stable operating conditions.

The overall facility includes two independent enclosures, which accommodate the test beds and the high-flux solar simulator respectively, and a control setup for the management and operation of the experiment. Both rooms are connected by a large-aperture window furnished with a double-blind shutter system for automatic control of flux.

An extensive set of characterization tools makes it possible to measure in situ temperatures and radiation flux density by contact and non-contact techniques and process gas composition if required. A special data acquisition system developed in LabVIEW® allows control and monitoring of the experiment and acquisition of any information required



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Agenda

08:30 – 09:00	**Arrival - Welcome coffee at IMDEA Energy and registration**	**IMDEA Energy**	**30 min**
09:00 – 09:15	**Welcome to IMDEA Energy** **Introduction and goas**	**J. González-Aguilar (IMDEA Energy)**	**15 min**
9:15 – 10:00	**High flux solar simulators: overview, technology, and applications**	**J. González-Aguilar (IMDEA Energy)**	**45 min**
10:00 – 10:45	**Optical and thermal characterisation in high-flux solar simulators**	**R. Conceiçao (IMDEA Energy)**	**45 min**
10:45 – 11:00	**--- Coffee break ---**		**15 min**
11:00 – 12:00	**Visit to the solar simulators at IMDEA Energy: General description**	**J. González-Aguilar (IMDEA Energy)**	**60 min**
12:00 –13:00	**Practical case: Flux measurement**	**R. Conceiçao (IMDEA Energy)**	**60 min**
13:00 – 14:00	**--- Lunch break ---**		**60 min**
14:00 – 16:30	**Practical case: Characterisation of volumetric receivers in high flux solar simulators**	**R. Conceiçao (IMDEA Energy)**	**150 min**
16:30 – 16:45	**Closing remarks**	**J. González-Aguilar (IMDEA Energy)**	**15 min**

This is a draft agenda. Description and time slot of some items may be subject to changes.

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MEETING PLACE & ACCOMMODATION

Training place	IMDEA Energy Institute
Address Training Location:	Avenida Ramón de la Sagra, 3. 28935 Móstoles, Madrid, Spain
How to get to the Training place from the airport	In case you would prefer staying in Madrid downtown, you will be able to easily reach IMDEA Energy either by metro or by train (see information below). Please count with about 30 minutes journey each way. The city of Móstoles is located in the South West of Madrid and the Airport Madrid-Barajas is in the North East of the city.  IMDEA Energy premises are about 15 to 20 minutes walking distance from the regional train station Móstoles El Soto. It is recommended to **follow a path via the Rey Juan Carlos University Campus** as shown on the right map above.  

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	By taxi - From the airport to IMDEA Energy or Hotel Ciudad de Móstoles: count with 30 minutes and between 50-60€ - From Madrid centre to IMDEA Energy or Hotel Ciudad de Móstoles: count with 25 minutes and between 25-30€ **By public transport** - From the airport, it is recommended to take the regional train called "Cercanias" and departing from terminal 4 at Madrid Barajas. There is a bus connection between terminal 2 and terminal 4. - In terminal 4, you will have to buy a train ticket to Móstoles El Soto. - From the terminal 4, take the line C1 heading to Atocha Railway Station and get off at Atocha Station. - From Atocha Station, take the line C5 heading to Móstoles EL Soto, which is the final station. Get off there. - It will take you ca. 1:10 hour and cost around 2.70 €. The line C1 to Atocha departs every 30 minutes and the line C5 to Móstoles El Soto departs every 10 minutes. - Timetables for regional train can be consulted here. **Alternative route:** - Atocha Station can be reached with the Express bus airport departing from the airport every 15-20 minutes. The journey to Atocha Station by bus takes ca. 30 minutes depending on the traffic. You will need to purchase separate ticket for the train and the regional train. - Further information on the Express bus airport can be found here. - From Atocha Station to Móstoles El Soto, please follow instructions above.
Accommodation	IMDEA Energy recommends the following hotels: **Hotel Ciudad de Móstoles (Closest hotel)** Ctra. Móstoles-Villaviciosa de Odón Km. 0,200; 28931, Móstoles, Madrid Tel: +34 916 140 669, Email: recepcion@h-ciudadmostoles.com http://www.hotelciudaddemostoles.es/en Hotel is 10 minutes walk away from IMDEA Energy premises, 8 minutes walk from the train station El Soto and 20 minutes walk from the metro station Universidad Rey Juan Carlos (see map below).

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	Booking can be made by phone or per e-mail. Please provide the booking reference IMDEA Energy to benefit from IMDEA Energy reduced rates:65€ for a single room, breakfast and VAT included 75€ for a double room, breakfast and VAT included **Sercotel Spa La Princesa** Carretera M-506 Km. 9, salida Móstoles centro, 28922 Móstoles, Spanien https://www.laprincesa.com/ Hotel is about 1.9 km from the train station renfe Mostoles central. From there you may take a train to Mostoles El Soto station to IMDEA Energy. Price about 65 euro per night (breakfast not included) **Hotel Ibis budget Madrid Alcorcón Móstoles (cheapest option)** Travesía de Móstoles n°3 N 40°20'2.75''W 3°51' 14.60, 28921, Alcorcón, Spain http://www.ibis.com/gb/hotel-3201-ibis-budget-madrid-alcorcon-mostoles/index.shtml Hotel is about 1.2 km from train Station of Mostoles Central. From there you may take a train to Mostoles El Soto station to visit IMDEA Energy. Price about 43 Euro per night (breakfast not included) **Hotel NH Alcorcon (another option)** Edificio A, Av. de Europa, 2, 28922 Alcorcón, Madrid, Spain Hotel website : HotelnhAlcorcon From hotel you can take metro at station “Parque Oeste” and get out at the next stop “Universidad Rey Juan Carlos”. From University just cross the campus and the bridge to IMDEA Energy. Prices between 60-80 Euro per night.
Contacts for the Training	José Gonzalez Aguilar (IMDEA Energy) **Tel.:** +34 917371136 **E-mail**: jose.gonzalez@imdea.org
Participation confirmation for the Training	**SFERA III website :** https://sfera3.sollab.eu/events/list/

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