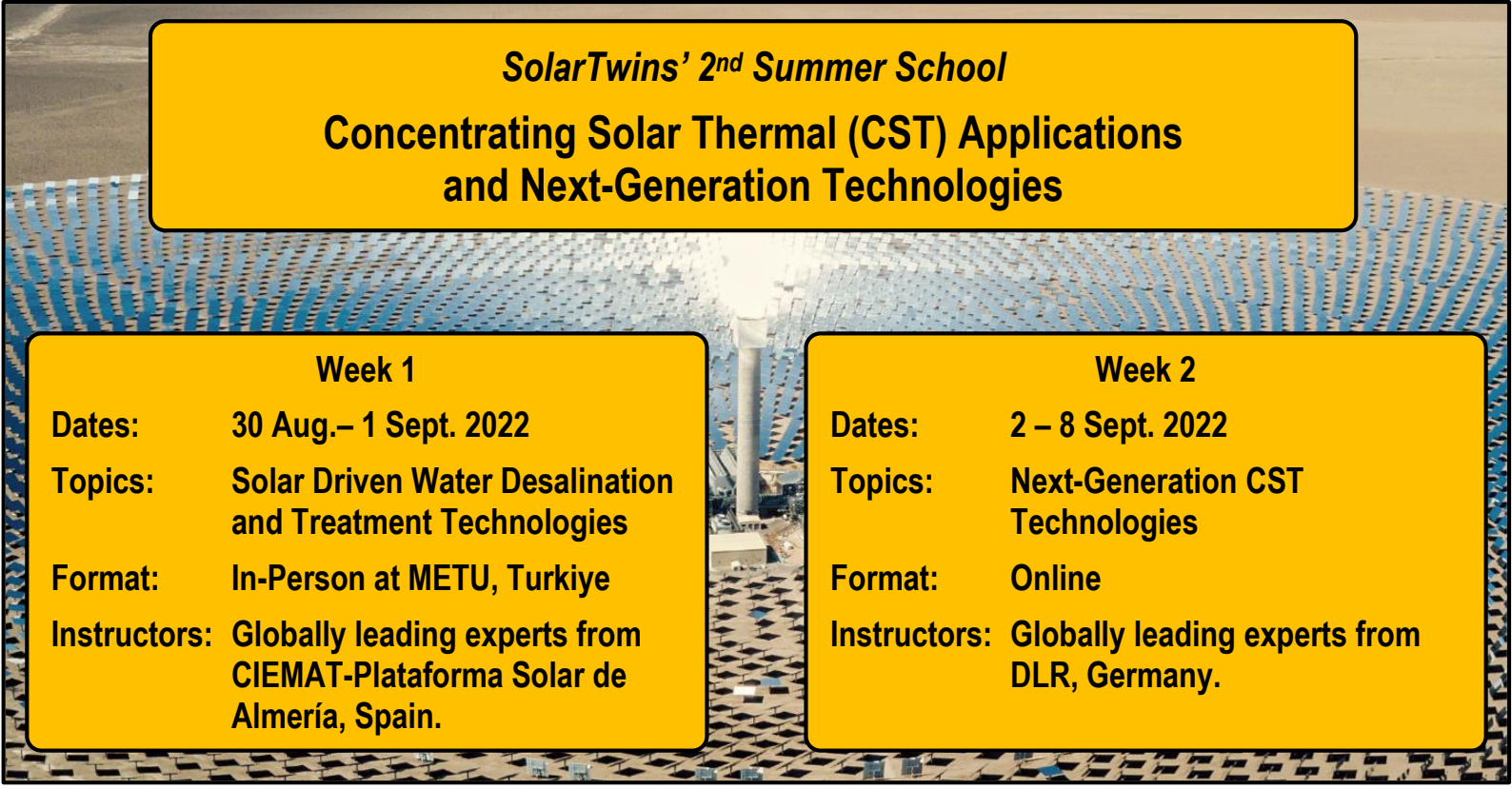

SolarTwins' 2nd Summer School

Concentrating Solar Thermal (CST) Applications and Next-Generation Technologies

Week 1

Dates: 30 Aug.– 1 Sept. 2022

Topics: Solar Driven Water Desalination and Treatment Technologies

Format: In-Person at METU, Turkiye

Instructors: Globally leading experts from CIEMAT-Plataforma Solar de Almería, Spain.

Week 2

Dates: 2 – 8 Sept. 2022

Topics: Next-Generation CST Technologies

Format: Online

Instructors: Globally leading experts from DLR, Germany.

Class Schedule	
Solar Driven Water Desalination and Treatment Technologies, Aug. 30-Sept. 1, 2022	Daily, Tuesday-Thursday (Chemical Engineering D Block Z14 at METU) Tuesday: 9:30-16:45 (including coffee and lunch breaks) Wednesday 9:30-16:30 (including coffee and lunch breaks) Thursday 9:30-16:15 (including coffee and lunch breaks)
Next-Generation CST Technologies, Sept. 2-8, 2022	Daily, Friday-Thursday (https://zoom.us/j/95211717225) Session 1: 10:00-12:00 Turkish Time (09:00-11:00 CET) 2-hr Break: 12:00-14:00 Turkish Time (11:00-13:00 CET) Session 2: 14:00-16:00 Turkish Time (13:00-15:00 CET)

About the SolarTwins 2nd Summer School	The SolarTwins 2nd Summer School will cover CST applications on solar driven water desalination and treatment technologies and next generation CST applications, including particle technologies and solar fuels.
Summer School Format	Week 1: In-Person Lectures at METU (Ankara, Turkiye) Week 2: Online Lectures
Admissions and Target Audiences	This Summer School is specifically targeting engineers with at least a BSc degree including graduate students, academics, and researchers in industry. Registration priority will be given to: 1. METU researchers collaborating with CIEMAT or DLR experts through the SolarTwins; 2. METU researchers performing research aligned with SolarTwins; 3. The Turkish *ODAK$_{TR}$* CST community; 4. Female researchers and engineers from any institution to support the UN's Sustainable Development Goal (UN SDGs) for Gender Equality; 5. Researchers and engineers with connections to countries that often lack access to scientific courses sponsored by the EU and other major scientific funding agencies with a specific focus on Nigeria and Pakistan.

SolarTwins has received funding from the Horizon 2020 research and innovation program under grant agreement No 856619.

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About the Instructors	**Dr. Diego Alarcón** is a senior researcher of Solar Desalination Unit at CIEMAT-Plataforma Solar de Almería, Spain. **Dr. Reiner Buck** is the Head of Solar High Temperature Technologies at DLR - Institute of Solar Research, Germany. **Serdar Hicdurmaz** is a Researcher at DLR - Institute of Solar Research, Germany. **Dr. Luka Lackovic** is the Team Lead for High Temperature Particle Systems at DLR - Institute of Solar Research, Germany. **Dr. Gkiokchan Moumin** is a Project Manager at the DLR Institute of Future Fuels, Germany. **Dr. Isabel Oller** is the Head of the Solar Treatment of Water Unit at CIEMAT-Plataforma Solar de Almería, Spain. **Anja Raab** is a researcher at DLR - Institute of Solar Research, Germany. **Markus Reichart** is a researcher at DLR - Institute of Solar Research, Germany. **Dr. Martin Roeb** is the Department Head in the Institute of Future Fuels at DLR, Germany. **Dr. Florian Wiesinger** is researcher at DLR - Institute of Solar Research, Spain.
About the SolarTwins Project	SolarTwins is an EU Horizon 2020 (H2020) project. The aim of the SolarTwins project is to step-up the scientific excellence of the promising CST Research Division *ODAK* of METU (Coordinator) in collaboration with the internationally leading CST institutions CIEMAT-PSA (Spain) and DLR (Germany). During SolarTwins *ODAK* was spun-out of METU to form the larger Turkish Center of Excellence on Solar Energy *ODTÜ-GÜNAM.* While METU is still the SolarTwins coordinator, ODTÜ-GÜNAM is an unofficial beneficiary. SolarTwins includes 4-weeks of CST summer schools at METU taught by leading experts from CIEMAT-PSA and DLR, and METU graduate students co-advised by experts from CIEMAT-PSA and DLR. An expected impact is the establishment of competitively-funded METU, ODTÜ-GÜNAM and CIEMAT, and METU, ODTÜ-GÜNAM, and DLR Joint Research Lines.
About ODAK$_{TR}$	*ODAK$_{TR}$* is a Turkish CST initiative catalyzed by SolarTwins and led by METU and ODTÜ-GÜNAM. The objectives of *ODAK$_{TR}$* are to 1. Support Turkiye's Clean Energy Transition through the development and commercialization of CST technologies; 2. Strengthen Turkiye's CST Research and Innovation (R&I) capacities, including by creating globally competitive CST research opportunities at Turkish universities. 3. Catalyze domestic CST economic activity by supporting growth in markets, industrial capacities, and industrial activities; One of *ODAK$_{TR}$*'s main strategies to achieve these objectives is through harmonization of national activities with EU CST initiatives by strengthening and exploiting synergies created by METU and ODTÜ-GÜNAM's participation in 7 accepted, on-going or recently completed EU Horizon projects: 1. SolarTwins; 2. HORIZON-STE; 3. SFERA-III; 4. INSHIP; 5. GeoSmart; 6. CST4ALL; 7. SolarHub

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Organizing Institutions

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SolarTwins 2nd Summer School

Week 1: Solar Driven Water Desalination and Treatment Technologies

In-person in the Department of Chemical Engineering D Block Room: Z14 at METU,
August 30 – September 1, 2022

Tuesday, August 30, 2022

Turkish Time	Lecture	Speakers
9:30-10:00	Introduction	P. Zeynep Çulfaz-Emecen
10:00-12:00	Fundamentals of water desalination	Diego Alarcón
12:00-13:30	Lunch Break	
13:30-15:00	Fundamentals of water decontamination	Isabel Oller
15:00-15:15	Break	
15:15-16:45	Fundamentals of water disinfection	Isabel Oller
16:45	End of day 1 lectures	

Wednesday, August 31, 2022

Turkish Time	Lecture	Speakers
9:30-11:00	Fundamentals of thermal desalination processes	Diego Alarcón
11:00-11:15	Break	
11:15-12:15	Fundamentals of thermal desalination processes	Diego Alarcón
12:15-13:45	Lunch Break	
13:45-14:45	Solar photoreactors for water decontamination and disinfection	Isabel Oller
14:45-15:00	Break	
15:00-16:30	Advanced analytical techniques for water treatment monitoring	Isabel Oller
16:30	End of day 1 lectures	

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Thursday, September 1, 2022

Turkish Time	Lecture	Speakers
9:30-11:00	Solar thermal energy in desalination	Diego Alarcón
11:00-11:15	Break	
11:15-12:45	Solar thermal cogeneration schemes	Diego Alarcón
12:45-14:15	Lunch Break	
14:15-16:15	Water treatment technology applications	Isabel Oller
16:15	End of Week 1 lectures	

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Week 2: Next-Generation CST Technologies

On-line, September 2-8, 2022 (https://zoom.us/j/95211717225)

Friday, September 2, 2022

Turkish Time	Lecture	Speaker
10:00 - 12:00 [CET: 09:00 - 11:00]	Standardized reflector testing and advanced optical characterization tools	Florian Wiesinger
12:00 - 14:00 [CET: 11:00 - 13:00]	Break	
14:00 - 16:00 [CET: 13:00 - 15:00]	Standardized reflector testing and advanced optical characterization tools (*cont'd*)	Florian Wiesinger
16:00 [CET: 15:00]	End of day 1 lectures	

Monday, September 5, 2022

Turkish Time	Lecture	Speakers
10:00 - 12:00 [CET: 09:00 - 11:00]	Part I: A review of particle solar receiver concepts and other components in CSP systems Part II: Techno-economic analysis of multi-tower solar particle power plants	Luka Lackovic, Reiner Buck
12:00 - 14:00 [CET: 11:00 - 13:00]	Break	
14:00 - 16:00 [CET: 13:00 - 15:00]	Modelling Efforts for the particle receivers and their application to CentRec	Serdar Hicdurmaz
16:00 [CET: 15:00]	End of day 2 lectures	

Tuesday, September 6, 2022

Turkish Time	Lecture	Speakers
10:00 - 12:00 [CET: 09:00 - 11:00]	Experimental work and results for solar particle receivers	Anja Raab
12:00 - 14:00 [CET: 11:00 - 13:00]	Break	
14:00 - 16:00 [CET: 13:00 - 15:00]	Development of a gas-particle trickle flow heat exchanger for application in CSP tower plants	Markus Reichart
16:00 [CET: 15:00]	End of day 3 lectures	

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Wednesday, September 7, 2022

Turkish Time	Lecture	Speaker
10:00 - 12:00 [CET: 09:00 - 11:00]	Hydrogen and Hydrocarbon generation through solar thermal processes	Martin Roeb
12:00 - 14:00 [CET: 11:00 - 13:00]	Break	
14:00 - 16:00 [CET: 13:00 - 15:00]	Hydrogen and Hydrocarbon generation through solar thermal processes (*cont'd*)	Martin Roeb
16:00 [CET: 15:00]	End of day 4 lectures	

Thursday, September 8, 2022

Turkish Time	Lecture	Speaker
10:00 - 12:00 [CET: 09:00 - 11:00]	Solar energy integration into basic material production and recycling	Gkiokchan Moumin
12:00 - 14:00 [CET: 11:00 - 13:00]	Break	
14:00 - 16:00 [CET: 13:00 - 15:00]	Solar energy integration into basic material production and recycling (*cont'd*)	Gkiokchan Moumin
16:00 [CET: 15:00]	End of the 2nd SolarTwins Summer School	

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