

Summer Schools for Valorization of Secondary Raw Materials

The laboratory of Metallurgy at NTUA, is happy to invite you to join three summer schools that will be organized in the course of the EIT Raw Materials projects Sisal Slag Valorization, Scavanger and ScaleUp:

- **Sisal slag project - Calcium Aluminate Slag Valorization**
- **Scavanger - Titanium Dioxide Industry: The acid waste stream**
- **ScaleUp - Sc in the Alumina Industry: Turning waste into treasure**

The summer schools will take place at the Elysian Luxury Hotel and Spa in Kalamata from the 20th to the 22nd of September 2023.



Resort Contact details:
Elysian Luxury Hotel and Spa
Tel: 0030 2721 180100
 **elysianreception@gmail.com**
 **Synoikia Kordia,**
Kalamata 241 00, Greece

Who should attend?

Participants from industry (engineers, scientists, researchers, technologists) and academia (postgraduate students and post-doctoral researchers) are welcome.

Costs

Registration is free of charge. Tickets to Kalamata and accommodation will be covered by the participants. The meals will be complimentary.

Registration is limited and is now open! Registration is allowed until the 31st of May but please book your stay as early as possible.

Click [here](#) to register now.

For more information: Danai Marinos, email: dmarinos@metal.ntua.gr

PROGRAMME - DAY 1, 20TH OF SEPTEMBER

Sisal slag project - Calcium Aluminate Slag Valorization

Time	Topic	Speaker
10:00-10:45	Introduction to the SISAL SLAG KIC project	NTNU - Gabriella Tranell
10:45-11:00	Discussion - Q & A	
11:00-11:45	Metallurgical approach to SoG-Si (solar grade silicon) production - the Silicor process	RU - Pr. Guðrún Sævarsdóttir
11:45-12:00	Discussion - Q & A	
12:00-12:30	Coffee Break	
12:30-11:15	Calcium Aluminate slag leaching for the recovery of Al	NTUA - Michail Vafeias
11:15-11:30	Discussion - Q & A	
11:30-12:15	High purity alumina (HPA) production by crystallization with HCl gas purging	NTUA - Danai Marinos, SIQAL - Matthias Heuer
12:15-12:30	Discussion - Q & A	
12:30-14:00	Lunch Break	
14:00-14:45	Lithium-Ion battery manufacturing and recycling – The role of new materials in circular value chains	Andreas Wolf - Fraunhofer
14:45-15:00	Discussion - Q & A	
15:00-15:45	Process performance vs techno-economic viability of SisAl business cases	BNW -Torstein Haarberg
15:45-16:00	Discussion - Q & A	
16:00-16:45	CO ₂ looping options	RWTH - Zixi Gao
16:45-17:00	Discussion - Q & A	

Eligible candidates will be able to get familiar with the Sisal Slag project and, through various courses, learn why Silicon and Aluminum are important for the EU and how they can be produced and marketed through a more sustainable concept.



PROGRAMME - DAY 2, 21st OF SEPTEMBER

Scavanger - Titanium Dioxide Industry: The acid waste stream

Time	Topic	Speaker
10:00-10:45	Introduction to the Scavanger project: Sc, Nb, and V criticality uses and market problems/ The acid waste stream of the Titanium Dioxide Industry	CATURA – Beate Orberger
10:45-11:00	Discussion - Q & A	
11:00-11:45	Solvent Extraction process to recover Sc	MEAB - Robin Scharfenberg and Edward Peters
11:45-12:00	Discussion - Q & A	
12:00-12:30	Coffee Break	
12:30-11:15	Ion-exchange process to recover Sc from HCl solutions	NTUA - Danai Marinos and Elena Mikeli
11:15-11:30	Discussion - Q & A	
11:30-12:15	Scandium & Niobium refining technologies	RWTH - Richard Schneider
12:15-12:30	Discussion - Q & A	
12:30-14:00	Lunch Break	
14:00-14:45	Scandium, Niobium and Vanadium market strategies	V.I.C. - Henk Van der Laan and RWTH - Yashvi Baria
14:45-15:00	Discussion - Q & A	
15:00-15:45	LCL and LCA of the process	ENALOS - Konstantinos Sakkas and Christos Georgopoulos
15:45-16:00	Discussion - Q & A	

Eligible candidates will have the opportunity to get familiar with the Scavanger project and, through various courses, to learn about the criticality of the metals Sc, Nb, and V for the EU, which processes can be applied to selectively extract these elements and their market analysis.



PROGRAMME - DAY 3, 22nd OF SEPTEMBER

ScaleUp - Sc in the Alumina Industry: Turning waste into treasure

Time	Topic	Speaker
10:00-10:45	Secondary resources of Sc in the EU/ The importance of Sc - Use in Sc-Al alloys	Kostantinia Papadimitriou - ADMIRIS
10:45-11:00	Discussion - Q & A	
11:00-11:45	Sc in the Bauxite residue - Introduction to the ScaleUp project	CATURA - Beate Orberger
11:45-12:00	Discussion - Q & A	
12:00-12:30	Coffee Break	
12:30-11:15	Sc recovery from the Bauxite Residue – Leaching	MYTILINEOS - Efthymios Balomenos
11:15-11:30	Discussion - Q & A	
11:30-12:15	Sc recovery by ion-exchange and recycling the raffinate solution - available options	NTUA - Danai Marinos and Elena Mikeli
12:15-12:30	Discussion - Q & A	
12:30-14:00	Lunch Break	
14:00-14:45	Crystallization of ScF ₃	KTH - Kerstin Forsberg
14:45-15:00	Discussion - Q & A	
15:00-15:45	Sc-Al alloys - Aluminothermic production	NTUA - Dimitrios Sparis and RWTH - Richard Schneider
15:45- 16:00	Discussion - Q & A	

Eligible candidates will have the opportunity to get familiar with the ScaleUp project and, through various courses, to learn about the criticality of scandium for the EU, its existence in the bauxite residue, and which processes can be applied to selectively extract these elements. Furthermore, they will discover the recyclability of acidic waste, crystallization of scandium salts, and aluminothermic production of Al-Sc alloys.

