

UMA³ training and knowledge transfer activities

Summer School on *'lightweight alloys and MMCs for aerospace*

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Strategic Workshop on *'simulation of materials behavior and manufacturing processes'*



University of Patras, Western Greece

<https://www.upatras.gr/en/>



Summer School: 26-28 September, 2022

Strategic Workshop: 29-30 September, 2022

Summer School Agenda:
“Lightweight alloys and MMCs for aerospace”
 26-27-28 September 2022

26 th September – Session 1	“Lightweight alloys and MMCs in aerospace – usage, production methods and perspectives”
27 th September – Session 2	“Mechanical performance of lightweight alloys and MMCs”
28 th September – Session 3	“Physicochemical characterization of metals and alloys”

SESSION 1: “Lightweight alloys and MMCs in aerospace – usage, production methods and perspectives”		
26 th September 2022 (09:45-16:00)		
09:45 – 10:00	1. Welcome Reception	Laboratory of Technology & Strength of Materials (LTSM) staff
10:00 – 10:15	2. Official welcome and presentation of the Summer School agenda	Spiros Pantelakis, <i>Professor Emeritus, University of Patras, LTSM</i>
10:15– 10:45	3. Presentation of the University of Patras with focus on LTSM research activities	George Lampeas, <i>Professor, LTSM Director, Deputy Director of the Mechanical Engineering & Aeronautics Department</i>
10:45 – 11:15	4. Coffee Break Coffees, beverages and snacks offered to the attendants	
11:15 – 12:00 <i>(including 10-15 minutes for discussion)</i>	5. Lightweight alloys and MMCs in aerospace: usage, production methods and perspectives - an overview	Dionysios Markatos, <i>Postdoctoral Researcher, LTSM</i>
12:00 – 13:00 <i>(including 10-15 minutes for discussion)</i>	6. Aircraft aluminum alloys: applications and future trends	Alexis Kermanidis, <i>Associate Professor, Department of Mechanical Engineering, University of Thessaly</i>
13:00 – 14:00	7. Lunch Break	
14:00 – 14:30	8. Transfer to the Institute of Chemical Engineering Sciences of the Foundation for Research and Technology - FORTH / ICE-HT	



14:30 – 16:00	9. Visit to the Composites and Nanomaterials Laboratory of FORTH / ICE-HT The laboratory is a European center of excellence in composites and nanomaterials. It performs pioneering research on graphene.	Host: Costas Galiotis, Professor, Department of Chemical Engineering, University of Patras, Former Director of the Institute of Chemical Engineering Sciences (ICE-HT)
16:00 – 16:30	10. Return to hotel	
20:00 – 22:00	11. Welcome dinner Let's have a dinner near the sea and meet each other	



SESSION 2: “Mechanical performance of lightweight alloys and MMCs”

27th September 2022 (10:00-16:00)

10:00 – 11:00 <i>(including 10-15 minutes for discussion)</i>	1. Mechanical behavior of aircraft structural alloys and MMCs	Konstantinos Tserpes, Associate Professor, LTSM, Department of Mechanical Engineering & Aeronautics, University of Patras
11:00 – 11:30	2. Coffee Break	
11:30 – 12:45 <i>(including 10-15 minutes for discussion)</i>	3. Fatigue and corrosion of aircraft structural alloys	Alexis Kermanidis, Associate Professor, Department of Mechanical Engineering, University of Thessaly
12:45 – 14:00	4. Lunch Break	
14:00 – 16:00	5. Mechanical testing of materials – Hands-on Characterization of materials in LTSM's testing lab	Konstantinos Fotopoulos, Postdoctoral Researcher, LTSM Ioannis Floros, Postdoctoral Researcher, LTSM
16:00 – 16:30	6. Return to hotel	
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SESSION 3: “Physicochemical characterization of metals and alloys

28th September 2022 (10:00-16:00 CET)

10:00 – 11:00 <i>(including 10-15 minutes for discussion)</i>	1. Advanced physicochemical methods for surface characterizations of lightweight alloys	Eleftherios Amanatidis , Associate Professor, Department of Chemical Engineering, University of Patras
11:00 – 11:30	2. Coffee Break	
11:30 – 13:30	3. Visit to the Laboratory of Electron Microscopy and Microanalysis (L.E.M.M.) of University of Patras. The laboratory is a contemporary center of electron microscopy and instrumental analysis, which provides high quality services to the University community and to external users.	L.E.M.M staff
13:30 – 14:30	4. Lunch	
14:30 – 16:00	5. Visit to the Plasma Technology Laboratory (PTL), Department of Chemical Engineering The laboratory is a leading lab in plasma processing which is one of the most rapidly developing technology fields. The laboratory will offer training on plasma surface treatment for the enhancement of lightweight alloys and MMCs wettability	Hosts: Dimitrios Mataras , Professor, Director of PTL Department of Chemical Engineering, University of Patras Eleftherios Amanatidis Associate Professor, Department of Chemical Engineering, University of Patras
16:00 – 16:30	6. Return to hotel	
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Strategic Workshop Agenda:
“Simulation of materials behavior and manufacturing processes”
 29-30 September 2022

29 th September – Session 1	“Simulation of materials behavior and manufacturing processes – Part A”
30 th September – Session 2	“Simulation of materials behavior and manufacturing processes – Part B”

SESSION 1: “Simulation of materials behavior and manufacturing processes – Part A”

29 th September 2022 (10:00-16:00)		
10:00 – 10:15	1. Official welcome to the Workshop – Agenda presentation	Spiros Pantelakis, <i>Professor Emeritus, University of Patras, LTSM</i>
10:15 – 11:15 <i>(including 10-15 minutes for discussion)</i>	2. Simulation of the mechanical behavior of aerospace structures	George Lampeas, <i>Professor, LTSM Director and deputy Director of the Mechanical Engineering & Aeronautics Department</i>
11:15 – 11:45	3. Coffee Break	
11:45 – 12:45 <i>(including 10-15 minutes for discussion)</i>	4. Simulation of the Additive Manufacturing (AM) process	Charalampos Psychogios, <i>Dip. Eng., PhD candidate at LTSM</i>
12:45 – 14:00	5. Lunch	
14:00 – 14:45 <i>(including 10-15 minutes for discussion)</i>	6. The estimated Influence of Industry 4.0 in the Aeronautics	Dimitrios Mourtzis, <i>Professor, LMS, Department of Mechanical Engineering and Aeronautics, University of Patras, Vice President of Research and Development of the University of Patras</i>
14:45 – 16:00	7. Visit to the Laboratory for Manufacturing Systems and Automation (LMS) – Manufacturing Systems Group LMS is a European focal point for manufacturing systems and automation. The laboratory will offer training on analytical, numerical and experimental modeling of manufacturing processes	Host: Dimitrios Mourtzis, <i>Professor, LMS, Department of Mechanical Engineering and Aeronautics, University of Patras, Vice President of Research and Development of the University of Patras</i>
16:00 – 16:30	8. Return to hotel	
20:00 – 22:00	9. Dinner	

SESSION 2: “Simulation of materials behavior and manufacturing processes – Part B”

30th September 2022 (10:00-16:00)

10:00 – 11:00 <i>(including 10-15 minutes for discussion)</i>	1. Modelling and applications in various scales	Konstantinos Fotopoulos, Postdoctoral Researcher, LTSM Ioannis Floros, Postdoctoral Researcher, LTSM
11:00 – 11:30	2. Coffee break	
11:30 – 13:00 <i>(including 10-15 minutes for discussion)</i>	3. Holistic Design of Multi-Material Systems & Function-Integrative Engineering; Theory and Application	Angelos Filippatos, Dr., Group Leader at the Dresden Center for Intelligent Materials (DCIM), TU Dresden
13:00 – 14:00	4. Lunch	
14:00 – 15:45	5. Visit to the Laboratory for Manufacturing Systems and Automation (LMS) - Robots, Automation and Virtual Reality in Manufacturing Group A demonstration on Robots, Automation and Virtual Reality in Manufacturing will take place	Host: Dimitrios Mourtzis, <i>Professor, LMS, Department of Mechanical Engineering and Aeronautics, University of Patras, Vice President of Research and Development of the University of Patras</i>
15:45 – 16:00	6. Farewell speech	Spiros Pantelakis, <i>Professor Emeritus, University of Patras, LTSM</i>
16:00 – 16:30	7. Return to hotel	
20:00 – 22:00	8. Farewell Drink by the sea	

Bilateral meeting between University of Patras and University of Miskolc

1st October 2022 (10:00-13:00)

10:00 – 13:00	Bilateral meeting between the University of Patras and the University of Miskolc, for elaborating joint future research activities and strengthening the links between the two Universities.	LTSM and Miskolc
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Organizational notes

- ✓ A maximum number of 15 trainees are planned to take part in the two events. The rule first-come first-served applies.
- ✓ For your registration, please fill the registration form and send it to the following email address until July 31th 2022: dmark@upatras.gr; Subject: “UMA3 Summer School and Strategic Workshop”
- ✓ The summer school is free of charge.
- ✓ Travel and accommodation have to be organized and paid by each participant. A daily coffee break, a daily lunch and two dinners are included, and the expenses are covered by LTSM.
- ✓ Recommendations for your accommodation will be provided to you.

Contact Information

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