PhD 1

Project description

Location: Laboratory of Technology and Strength of Materials, Department of Mechanical Engineering & Aeronautics, University of Patras.

Project: HYdrogen Persistent Engineering by Additive Manufacturing – HYPE-AM. This project focuses on understanding and mitigating Hydrogen Embrittlement in novel materials through Additive Manufacturing (AM).

What we offer: Stimulating research environment with strong mentorship. Focus on cutting-edge AM technologies and addressing timely technological challenges like hydrogen embrittlement and decarbonization. Access to advanced techniques and world-class facilities, including synchrotron light sources. Opportunities for international collaborations and interdisciplinary work.

PhD Topic: Process optimization and AM of samples – materials characterization – process-microstructure-properties relationship

Your tasks

- Use Laser Powder Bed Fusion for developing metallic components
- (in collaboration with external partners initially and in the MEAD after commissioning of a system)
- Use ML algorithms to streamline the process windows and optimize methods
- Use scanning electron microscopy for characterizing the microstructure in collaboration with (ITE IEXMH in Patras and CAS, Brno Czech Republic)
- Collaborate with the project team proving samples for further characterization/investigations
- Participate in synchrotron X-ray diffraction experiments
- Publish results in scientific journals and present findings at scientific conferences

Your profile

- Diploma or Master degree in Materials science, Metallurgy, Mechanical Engineering, Chemical Engineering or related discipline
- Knowledge of processing, welding, additive manufacturing (even polymer) crystallography, microscopy characterization
- Programming skills in python and/or MATLAB will be an asset
- High motivation and ability to work independently in a collaborative and interdisciplinary research team on a big project
- Good communication skills in English (oral/written)

How to Apply:

Interested candidates are encouraged to first contact Prof. E. Polatidis at e.polatidis@upatras.gr for further information. Applications should include a detailed CV with publications list (if any) and a motivation letter.

PhD 2

Location: Laboratory of Technology and Strength of Materials, Department of Mechanical Engineering & Aeronautics, University of Patras.

Project: HYdrogen Persistent Engineering by Additive Manufacturing – HYPE-AM. This project focuses on understanding and mitigating Hydrogen Embrittlement in novel materials through Additive Manufacturing (AM).

What we offer: Stimulating research environment with strong mentorship. Focus on cutting-edge AM technologies and addressing timely technological challenges like hydrogen embrittlement and decarbonization. Access to advanced techniques and world-class facilities, including synchrotron light sources. Opportunities for international collaborations and interdisciplinary work.

PhD Topic: Experimental investigation on Hydrogen Embrittlement in Advanced Metallic Alloys

Your tasks

- Establish workflow for investigating hydrogen embrittlement investigations (hydrogen charging, hydrogen permeation and Thermal Desorption) in different materials
- Develop and commission a miniaturized hydrogen charging apparatus for in situ investigations at synchrotron light sources
- Assess the link between process-microstructure-properties in terms of hydrogen embrittlement in metallic alloys
- Lead synchrotron X-ray diffraction experiments to investigate hydrogen diffusion in situ – Analyze and interpret results
- Collaborate providing experimental verification to Atomistic Simulations (undertaken by a Postdoctoral researcher)
- Publish results in scientific journals and present findings at scientific conferences

Your profile

- Diploma or Master degree in Mechanical Engineering, Chemical Engineering, Materials Science, Physics or related discipline
- Knowledge of electrochemistry
- Programming skills in python and/or MATLAB will be an asset
- High motivation and ability to work independently in a collaborative and interdisciplinary research team on a big project
- Good communication skills in English (oral/written)

How to Apply:

Interested candidates are encouraged to first contact Prof. E. Polatidis at e.polatidis@upatras.gr for further information. Applications should include a detailed CV with publications list (if any) and a motivation letter.

PhD 3

Location: Laboratory of Technology and Strength of Materials, Department of Mechanical Engineering & Aeronautics, University of Patras.

Project: HYdrogen Persistent Engineering by Additive Manufacturing – HYPE-AM. This project focuses on understanding and mitigating Hydrogen Embrittlement in novel materials through Additive Manufacturing (AM).

What we offer: Stimulating research environment with strong mentorship. Focus on cutting-edge AM technologies and addressing timely technological challenges like hydrogen embrittlement and decarbonization. Access to advanced techniques and world-class facilities, including synchrotron light sources. Opportunities for international collaborations and interdisciplinary work.

PhD Topic: Alloy Design and Microstructure Engineering for Additive Manufacturing of stainless steels

Your tasks

- Investigate the addition of alloying elements/carbide particles on the phase equilibria, solidification pathways (in stainless steels) and grain size/annealing twins during AM. Computational thermodynamics and experimental verification.
- Use Laser Powder Bed Fusion for developing metallic components
- Use scanning electron microscopy for characterizing the microstructure in collaboration with (ITE IEXMH in Patras)
- Collaborate with the project team proving samples for further characterization
- Participate in synchrotron X-ray diffraction experiments
- Publish results in scientific journals and present findings at scientific conferences

Your profile

- Diploma or Master degree in Materials science, Metallurgy, Mechanical Engineering, Chemical Engineering or related discipline
- Knowledge of physical metallurgy, processing, welding, additive manufacturing (even polymer) crystallography, microscopy
- Experience with Thermo-Calc Software
- Programming skills in python and/or MATLAB will be an asset
- High motivation and ability to work independently in a collaborative and interdisciplinary research team on a big project
- Good communication skills in English (oral/written)

How to Apply:

Interested candidates are encouraged to first contact Prof. E. Polatidis at e.polatidis@upatras.gr for further information. Applications should include a detailed CV with publications list (if any) and a motivation letter.