



Job title	Marie Skłodowska-Curie Doctoral Network Position	Job family and level	Research and Teaching Off scale
School/ Department	Faculty of Engineering	Location	University Park Campus

Purpose of role

1. Feedstock powder modification and its effect on deposition mechanisms
2. To understand the gas atomized microstructure of different metallic powders
3. To homogenize the microstructure of gas atomized powder through customized complex, multistage heat treatment
4. To optimize the mechanical properties of cold sprayed deposits obtained from the modified powders
5. Using lasers to measure particle velocity and distribution in-flight
6. Robot path programming (ABB) for additive manufacturing
7. Computational fluid dynamics to enhance convergent divergent nozzle geometry
8. Finite element modelling to understand residual stresses during deposition of 3D shapes.

For more information on the RE-MAKE Doctoral Network, please visit <https://www.remake-project.eu/>

The successful applicant will be expected to make significant contributions to the development of Cold Spray Additive Manufacturing (CSAM) for both repair and additive manufacturing

	Main responsibilities (Primary accountabilities and responsibilities expected to fulfil the role)	% time per year
1	Conduct a literature review and establish the state of the art in Cold Spray Additive Manufacturing (CSAM) research for repair and additive manufacturing	10%
2	Conduct original research contributing towards a PhD qualification in feedstock powder medication, computational fluid dynamics modelling, finite element modelling, robot tool path programming, machine learning and materials processing-microstructure and properties relationships in CSAM of aerospace alloys	60%
4	Prepare project reports and scientific publications.	25%
5	Contribute to a positive community in Coatings & Surface Engineering.	5%

Person specification

	Essential	Desirable
Skills	<ul style="list-style-type: none"> ▪ Ability to creatively apply cold spray research approaches, models, techniques and methods. ▪ Ability to assess and organise resource requirements and deploy effectively. ▪ Ability to build relationships and collaborate with others, both internally and externally. ▪ Ability to work independently and as part of a multidisciplinary and multicultural team ▪ Ability to write and present effectively ▪ Ability to verbally communicate effectively 	<ul style="list-style-type: none"> ▪ Programming skills in Python ▪ Skills in Abaqus explicit finite element modelling ▪ Skills in Computational fluid dynamics
Knowledge and experience	<ul style="list-style-type: none"> ▪ applying the specialist skills, approaches and techniques required for the role in Cold Spray ▪ Networking, actively engaging with and valuing other areas and diverse groups ▪ Scientific writing ▪ Oral presentations ▪ Experience in materials characterisation ▪ Experience in materials processing ▪ Research experience in the project level 	<ul style="list-style-type: none"> ▪ Track record in Cold Spray ▪ Track record in a related materials deposition discipline
Qualifications, certification and training (relevant to role)	<ul style="list-style-type: none"> ▪ A good first degree in Materials, Mechanical or Manufacturing Engineering or Applied Physics 	<ul style="list-style-type: none"> ▪ A Masters degree in a relevant discipline
Statutory, legal or special requirements	<ul style="list-style-type: none"> ▪ Eligibility criteria for Early Stage Researchers in Marie Skłodowska-Curie Doctoral Networks (outlined in role advert) <p>Can be of any nationality but must not have resided or carried out their main activity (work, studies, etc.) in the country of the recruiting organization for more than 12 months in the 36 months immediately before their recruitment date</p>	



Expectations and behaviours

The University has developed a clear set of core expectations and behaviours that our people should be demonstrating in their work, and as ambassadors of the University's strategy, vision and values. The following are essential to the role:

- Valuing people** Is friendly, engaging and receptive, putting others at ease. Actively listens to others and goes out of way to ensure people feel valued, developed and supported.
- Taking ownership** Is clear on what needs to be done encouraging others to take ownership. Takes action when required, being mindful of important aspects such as Health & Safety, Equality, Diversity & Inclusion, and other considerations.
- Forward thinking** Drives the development, sharing and implementation of new ideas and improvements to support strategic objectives. Engages others in the improvement process.
- Professional pride** Is professional in approach and style, setting an example to others; strives to demonstrate excellence through development of self, others and effective working practices.
- Always inclusive** Builds effective working relationships, recognising and including the contribution of others; promotes inclusion and inclusive practices within own work area.

Key relationships with others



