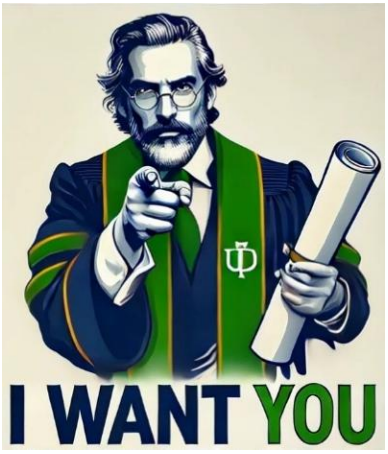
POST-DOCTORAL RESEARCH ENGINEER OPPORTUNITY

AT I-FORM ADVANCED MANUFACTURING RESEARCH CENTRE



The I-Form Advanced Manufacturing Re search Centre was established by ***Taighde Éireann – Research Ireland (formerly known as Science Foundation Ireland)*** in late 2017, with a mission to shape the future of manufacturing through high-impact research into the application of digital technologies to materials processing, thus increasing the competitiveness of Irish industry. I-Form operates in close collaboration with a network of companies, as well as leading manufacturing research centres from around the globe and over the course of its first phase has recruited a multi-disciplinary team of over 120 PhD and Post-Doctoral researchers. The Centre is hosted in University College Dublin with partners and researchers based in Dublin City University, Trinity College Dublin, Maynooth University, University of Galway, Atlantic Technological University, South East Technological University, University of Limerick and NIBRT.

Funding: this Project is funded by I-Form Advanced Manufacturing Research Centre, ***Taighde Éireann – Research Ireland*** and **ValCUN B.V.** (Subject to funding approval).

Project title: Molten Metal Deposition for Aluminium Alloys: controlling oxidation & interlayer adhesion for Additive Manufacturing

Project description: Aluminium alloys from the 6xxx and 7xxx series are widely used in industry thanks to their exceptional strength-to-weight ratio and thermal/electrical conductivity. However, their use in additive manufacturing (AM) has been restricted by oxidation, poor interlayer adhesion and cracking.
This postdoctoral project focuses on Molten Metal Deposition (MMD) — a novel, patented liquid metal AM process developed by ValCUN. Unlike powder-based or arc-based AM techniques, MMD uses a fully molten wire-fed process that enables casting-like solidification, reduced residual stresses, and compatibility with crack-sensitive alloys. The successful candidate will investigate the oxidation behaviour and interlayer bonding mechanisms in MMD for 6xxx/7xxx aluminium alloys through a combination of experimental and modelling approaches. The work will include:

- Controlled deposition experiments on alloys such as 4043, 6061, and 7075;
- Microstructural and mechanical characterisation (microscopy, tensile testing, hardness);
- Thermal analysis and process modelling to link oxidation dynamics with adhesion performance;
- Evaluation of mitigation strategies, including plasma cleaning and toolpath optimisation.

Working closely with ValCUN's team, the researcher will spend 50% of the time at the company in Belgium.

Project start date: Q1 2026

Project duration: 24 months

Minimum qualification: PhD in Material Science or Mechanical Engineering

Salary: Up to €49,396 per annum, dependent on experience

Please submit your Expression of Interest with a CV by email to:

Prof. David Browne, David.browne@ucd.ie and Dr. Jonas Galle, Jonas.galle@valcun.be