



NUI Galway
OÉ Gaillimh



HR EXCELLENCE IN RESEARCH

Research Associates / Postdoctoral Researchers- Robotic, Additive and Composite Manufacturing

SFI I-Form Centre, School of Engineering, Ryan Institute, NUI Galway

Ref. No. NUIG RES 120-21

Applications are invited from suitably qualified candidates for 2 full-time fixed-term positions as Research Associates / Postdoctoral Researchers within the **Advanced and Sustainable Manufacturing and Materials Engineering** Research Group (www.asmme.ie) based in the **School of Engineering** (<http://www.nuigalway.ie/engineering/>) and **Ryan Institute** (<http://www.nuigalway.ie/ryaninstitute/>) at the National University of Ireland, Galway.

These positions are funded by Enterprise Ireland and are available from July 2021 for one year (subject to extension if additional funding becomes available).

The Research Area:

The **Advanced and Sustainable Manufacturing and Materials Engineering** research group (www.asmme.ie) link fundamental material and process knowledge, with industry applications. Our goal is innovation and sustainability through the evolution of manufacturing, materials, and product design, working with a wide range of sectors such as aerospace, medical device, energy, agriculture and transport. Located in the Alice Perry Engineering Building at NUI Galway, our researchers have access to a wide range of state-of-the-art on-campus facilities, including the Advanced Manufacturing Lab with state-of-the-art additive manufacturing (3D-Printing) and robotics infrastructure. We also have a large network of collaborating companies, institutes, and research centers (e.g. www.i-form.ie) throughout Ireland and the world. This group also collaborates with colleagues and other groups across the College and Science and Engineering in NUI Galway.

Job Description:

The successful candidates will work in Advanced and Sustainable Manufacturing and Materials Engineering under the supervision of Dr. Noel Harrison and Dr Pouyan Ghabezi to develop advanced and sustainable composite additive manufacturing, and robotic-assisted manufacturing and assembly technologies. The successful candidates will be responsible for the development of automated composite manufacturing (e.g. layup and welding) technologies, and evaluation of the recycling potential of composite materials, and the use of recycled composite materials in advanced manufacturing methods such as 3D printing. The successful candidates will join a project team consisting of other researchers in the School of Engineering, a composite manufacturer SME and an unmanned aerial vehicle (UAV) - based delivery company. As part of the ASMME group, the successful candidate will also seek follow-on collaboration and funding opportunities for material recycling, additive manufacturing, process automation and composite processing and material technologies by aiding in, for example, Horizon Europe, InterREG, Enterprise Ireland and Science Foundation Ireland research project applications.

Duties:

The successful candidates will be responsible for a range of project tasks, including:

- Develop end of arm tooling for composite layup, induction welding and composite finishing operations.
- Develop robotic system programmes and virtual simulations of process and tooling using in-house robotic systems.
- Design experimental tests and microscopy investigations procedures on trial parts for process optimisation and part defect analysis.
- Assess the potential (costs, processes and material knock-down effects) of composite recycling and the use of recycled composites in manufacturing.
- Adapt and develop computational material models to include recycled material properties.

- Adapt and develop thermomechanical computational models of manufacturing processes, e.g. induction welding using software such as ABAQUS or COMSOL.
- Develop composite 3D-printing (additive manufacturing) design and process manufacturing
- Coordinate the engagement with industrial partners to assess and optimise lab-based manufacturing technologies for industrial scale-up.
- Keep up to date with research related methods and techniques, in particular, developments in the specific research area.
- Coordinate research project management duties, including preparation of technical and financial reports and reviews.
- Coordinate to lab and equipment management including managing access and contributing to internal Health and Safety documentation and procedures
- To have knowledge and understanding of the policy, practices and procedures, relevant to the role, this may include broader University/ sector/ external sponsor or funder (e.g. Commercial Awareness, Research Ethics, Knowledge Transfer, Patents, Intellectual Property Rights, Health and Safety, Equal Opportunities & Diversity).
- Liaise with other project members, industry partners and related projects.
- Attend project meetings and events.
- Disseminate research output via journal publications, conference presentation.
- Contribute to outreach and open STEM events related to group and lab activities.
- Contribute to intellectual property filings where appropriate.
- Assist in the preparation of further research proposals.
- Assist in related teaching and research activities.

Qualifications/Skills Required:

Essential Requirements:

- PhD in engineering, materials science, computer science or closely related fields, or a minimum of 4 years research experience post primary degree.
- Minimum of 2.1 Honours Bachelor or Master's degree
- Evidence of experience in Mechanical, Energy Systems, Materials Engineering, Manufacturing or closely related disciplines
- Excellent mathematical and advanced computational skills appropriate to the task (e.g. robotic programming and simulation, finite element analysis, custom programming,).
- Excellent written and verbal English
- Excellent communication skills
- Robotic system (design, tooling, programming and integration) experience or composites (design, modelling or processing) -experience
- Evidence of scientific publication and dissemination
- Experience in literature review.

Desirable Requirements:

- Industrial experience in a manufacturing environment
- Experimental mechanical testing expertise
- Microscopy expertise
- Project management experience
- Additive manufacturing experience
- Familiarity with drone technology

Salary: €38,632 to €50,029 per annum pro rata for shorter and/or part-time contracts (public sector pay policy rules pertaining to new entrants will apply).

Start date: Position is available from July 2021.

Further information on research and working at NUI Galway is available on [Research at NUI Galway](#) Researchers at NUI Galway are encouraged to avail of a range of training and development opportunities designed to support their personal career development plans. NUI Galway provides continuing professional development supports for all researchers seeking to build their own career pathways either within or beyond academia. Researchers are encouraged to engage with our Researcher Development Centre (RDC) upon commencing employment - see www.nuigalway.ie/rdc for further information.

For information on moving to Ireland please see www.euraxess.ie

Further information about the Advanced and Sustainable Manufacturing and Materials Research Group at NUI Galway is available at www.asmme.ie, the School of Engineering at <http://www.nuigalway.ie/engineering>, the Ryan Institute at <http://www.nuigalway.ie/ryaninstitute>, and the SFI centre I-Form at <http://www.i-form.ie>.

Informal enquiries concerning the post may be made to Dr Noel Harrison at noel.harrison@nuigalway.ie.

To Apply:

Applications to include a covering letter, CV, and the contact details of three referees should be sent, via e-mail (in word or PDF only) to Dr Noel Harrison (noel.harrison@nuigalway.ie).

Please put reference number **NUIG RES 120-21** in the subject line of the e-mail application.

Closing date for receipt of applications is 5.00 pm 28th June 2021

Due to the University closure related to COVID-19, interviews may have to take place virtually and start dates may need to be delayed

NUI Galway reserve the right to readvertise or extend the closing date for this post.

National University of Ireland, Galway is an equal opportunities employer.

All positions are recruited in line with Open, Transparent, Merit (OTM) and Competency based recruitment.

