



NUI Galway
OÉ Gaillimh



HR EXCELLENCE IN RESEARCH

Research Assistants- Robotic, Sustainable, Additive and Composite Manufacturing

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

Ref. No. NUIG RES 119-21

Applications are invited from suitably qualified candidates for 2 full-time fixed-term positions as Research Assistants 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 Sinéad Mitchell to develop advanced and sustainable composite additive manufacturing, robotic-assisted manufacturing and assembly technologies, and assessment of the sustainability of products and processes. The successful candidates will contribute to the development of automated composite manufacturing (e.g. layup and welding) technologies, and evaluation of the recycling potential of composite materials in 3D printing and a systems analysis of products and components from a circularity perspective (e.g., recyclability, modularity, longevity, reparability). 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. Applications are also encouraged from candidates considering a research Masters in Mechanical or Industrial Engineering.

Duties:

The successful candidates will contribute to a range of project tasks, including:

- Analysis of the environmental impacts of materials, production systems and whole product life cycles.
- Application of Life Cycle and Circular Thinking to product and manufacturing systems.
- Develop knowledge applicable to the manufacturing industry in relation to forthcoming policies and legislation related to sustainability both nationally (e.g., Action Plan for a Circular Economy) in Europe (e.g. EU Green Deal) and globally (e.g. UN Sustainable Development Goals and Planetary Boundaries)

- Contribute to the development of robotic end of arm tooling and programming for composite layup, induction welding and composite finishing operations.
- Perform experimental tests and microscopy investigations on trial parts for process optimisation and part defect analysis.
- Work with senior research group members on the assessment of the potential (costs, processes and material knock-down effects) of composite recycling and the use of recycled composites in manufacturing and the development of composite 3D-printing (additive manufacturing) design and process manufacturing
- Work with industrial partners to assess and optimise lab-based manufacturing technologies for industrial scale-up.
- Actively participate as a member of a research team and assist an individual research leader or team to conduct a particular study (or group of studies).
- To provide assistance in conducting research activities, including planning, organizing, conducting, and communicating research studies within the overall scope of a research project.
- To coordinate and perform a variety of independent tasks and team activities involved in the collection, analysis, documentation and some interpretation of information/results.
- To coordinate the development of forms, questionnaires and the application of qualitative and quantitative research techniques; write procedures manuals for data collection and coding.
- To present information on research progress and outcomes to others responsible for the research project, making use of standard research techniques and methods.
- Conduct literature and database searches and interpret and present the findings of the literature searches as appropriate.
- Assist in analysis and interpretation of results of own research.
- Contribute to preparation of technical and financial reports and reviews.
- Contribute to lab and equipment Health and Safety documentation and procedures
- Liaise with other project members, industry partners and related projects.
- Attend project meetings and events.
- Contribute to the dissemination of 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.
- Continue to update knowledge and develop skills.
- Develop internal and external contacts with researchers in related areas.
- May contribute to work of the College/School/Research Unit through activities such as student Open Days, other promotion activity as appropriate.

Qualifications/Skills required:

Essential Requirements:

- Minimum of 2.1 Honours Bachelor Degree in Engineering
- Evidence of experience in Mechanical, Industrial, Energy Systems, Materials Engineering, Manufacturing or closely related disciplines
- Excellent mathematical and computational skills appropriate to the task (e.g. robotic programming and simulation, finite element analysis, custom programming, Life Cycle Assessment).
- Familiarity with the Circular Economy and Circular Manufacturing.
- Experience in one or more of:
 - Sustainable/ eco design projects
 - Robotic systems (design, tooling, programming and integration)
 - Composites (design, modelling, or fabrication)
- Excellent written and verbal English
- Excellent communication skills

Desirable Requirements:

- Master's Degree in Engineering
- Industrial experience in a manufacturing environment
- Experimental mechanical testing expertise
- Microscopy expertise
- Project management experience

- Additive manufacturing experience
- Evidence of scientific publication and dissemination
- Familiarity with drone technology
- Knowledge of one or more of the following: Design for Environment (DfE)/Design for Sustainability (DfS) techniques and strategies, Life Cycle Assessment (LCA), Circularity Measures/indicators, Material Flow Analysis (MFA) and/or Product Service Systems
- Knowledge of systems reliability analysis

Employment permit restrictions apply for this category of post

Salary: €26,609 to €35,922 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. Applications are also encouraged from candidates considering a research Masters in Mechanical or Industrial Engineering.

To Apply:

Applications to include a covering letter, CV, and the contact details of two 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 119-21** 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

