Researcher Position at NUI Galway

Cell Culture trials on Carbon Fibre PEEK Composite Orthopaedic Fracture Fixation Devices (MedComp project)

Duration: 15 Weeks
Salary: Full-time up to Research Assistant Starting Point 3 (€24,528 per annum), depending on qualifications and experience. Part-time position also possible depending on depending on qualifications and experience.
Start Date: No later than 6th January 2020

NUI Galway is part of the Irish Composites Centre (IComp) research centre (www.icomp.ie). IComp was established in 2010 under the EI/IDA Technology Centres initiative. It is hosted by the University of Limerick (UL), working in partnership with NUI Galway (NUI Galway), University College Dublin (UCD) and Athlone Institute of Technology (AIT). IComp is the link between industry and the extensive resources dedicated to composite materials available in Irish third level institutions. Directed by our industry members, IComp's work is focused on solving technical challenges encountered on a daily basis and delivering research and development activity. IComp is supported by world-class academics and a dedicated team of highly-experienced researchers. The IComp team is helping to develop knowledge and skills within the Irish composites community enabling it to take advantage of the latest technology and be competitive in the growing global market.

The medical device sector offers a significant growth opportunity for the Irish composites industry. Barriers for greater adoption of composite materials in implantable medical devices include uncertainty of biocompatibility and limited characterization of long-term fretting, wear, fatigue and fracture under in-vivo physiological loading conditions. To date, just one carbon fibre PEEK material has been cleared by the Food and Drug Administration in the US for use in medical implants for humans [1], but little test data has been made available in the literature.

IComp is funding the feasibility research project **MedComp**. The aim of MedComp is to investigate the biocompatibility and fretting resistance of prototype femoral fracture plates manufactured by Jiangsu BaiDe Medical Instrument (www.bd-ortho.com) from FDA approved CFPEEK materials supplied by Invibio (invibio.com). Cell culture trials at NUI Galway will provide quantitative biocompatibility results. Mechanical fretting testing at the Composite Test Laboratory (CTL) in Eire Composites (www.eirecomposites.com) will determine fretting characteristic between CFPEEK at standard metallic orthopaedic screws.

The recruited researcher at NUI Galway will be responsible for the design and execution of a basic biocompatibility cell culture trial on samples of the CFPEEK implant token extracts, including scanning electron microscopy (SEM) of cultured tokens and of pre and post-fretting test samples. The researcher will also explore options for continued related research, by reviewing funding calls, e.g. H2020, InterREG, Enterprise Ireland, SFI.

Expected Qualification and Skills:

Applications are invited from high-achieving individuals with cell culture experience. Candidates should have excellent written and oral communication skills (English). Materials knowledge, including composites, is an advantage. A Level 9 Engineering, Science or Medicine qualification is desirable. Research project experience, including research project management, is also desirable.

How to Apply:

If you are interested in this post send your CV and brief cover letter by email (with "*IComp NUI Galway MedComp Researcher application*" in the subject line) to noel.harrison@nuigalway.ie as soon as possible. Informal enquiries are also welcome in advance of submitting your CV and letter. Recruitment is expected to take place in November / December 2019, with the project starting no later than 6th January 2020.

References:

1. Gallagher, E.A., S. Lamorinière, and P. McGarry, *Multi-axial damage and failure of medical grade carbon fibre reinforced PEEK laminates: Experimental testing and computational modelling*. Journal of the Mechanical Behavior of Biomedical Materials, 2018. 82: p. 154-167.