



Postgraduate Research Opportunity

PROJECT TITLE: DEVELOPMENT OF NOVEL FRP COMPOSITE REINFORCEMENT FOR CONCRETE

PROJECT DESCRIPTION:

Reinforced concrete is one of the most common construction materials in the world and employs steel as the main reinforcing element. However, steel may be subject to corrosion, particularly in aggressive environments. Primarily, corrosion protection is provided by substantial thickness of concrete cover, which is very inefficient both structurally and economically.

Fibre reinforced polymer composites (FRP) offer potential alternatives to steel reinforcement, which may offer increased efficiency and improved durability performance of reinforced concrete structures. Currently there are no design codes in Europe for these materials. Further, they provide on-site challenges as their formation process yields them unsuitable for bending, while they are also relatively expensive. Separately, approximately 100,000 tonnes of plastic waste is collected in Ireland for recycling annually, of which almost 80% is exported.

This project aims to develop novel FRP composites, which can be used as a cost-effective replacement for steel reinforcement in concrete structures, improving sustainability and increasing efficiency. Moreover, these materials aim to employ recycled plastics as the polymeric resins through a thermoplastic formation process, yielding them suitable for on-site bending. This project will contribute to the development of new guidelines for use of composites in construction and, if successful, offers significant global commercialisation potential.

Duration of project: **21 months**

Collaboration with Industry: Some collaboration with industry and participation in EU COST Action Project, including attendance at COST Action Meetings

Funding Agency: [AIT President's Seed Fund](#)

Type of degree offered: [MEng/MSc](#)

Minimum qualifications/experience necessary/any other requirements:

Minimum second class honours degree in civil, mechanical or polymer engineering or related discipline. Previous experience with either frp composites or concrete testing would be an advantage.

Research Supervisor: Dr. Paul Archbold

Email address: parchbold@ait.ie

Application forms available from Anita Watts, Office of Research, Athlone Institute of Technology, Tel: +353 90 64 83061 Email: awatts@ait.ie or from link *Download Application Form* on AIT website – Vacancies- Postgraduate Research Opportunities.

Closing date for receipt of completed application forms which must be submitted to Anita Watts, Office of Research, Athlone Institute of Technology, Dublin Road, Athlone, Co. Westmeath is **5.00 pm on Friday, 31st August, 2013.**