Post Specification **Post Title:**	Research Fellow in Circular Economy of Plastics
Post Status:	1 year Fixed-term Contract or Specific Purpose Contract – Full-time – With possible 3 years extension
Research Group / Department / School:	Polymeric Materials & NanoComposites (PMNC) Group, AMBER/School of Chemistry, Trinity College Dublin, the University of Dublin
Location:	School of Chemistry and AMBER, Trinity College Dublin, the University of Dublin College Green, Dublin 2, Ireland
Reports to:	Prof. Ramesh Babu
Salary:	Appointment will be made on the point 1-2 of the IUA post-doctorate researcher Level 2 salary scale per annum at a point in line with Government Pay Policy, appointment will be made no higher than point
Hours of Work:	40
Closing Date:	12 Noon (Irish standard time) 27th Jan 2020 (or until filled).

The successful candidate will be required to take up post as soon as possible

Post Summary

Background

Polymeric Materials and Nanocomposite (PMNC) group (http://physics.tcd.ie/pmnc/) at TCD, is looking to recruit motivated and high quality Postdoctoral research fellow to work on technologies to accelerate waste plastic degradation using various innovative technologies. The ideal candidate will be expected to contribute significantly to deliver European-Chinese collaboration project (https://cordis.europa.eu/project/id/870292). The Bio Innovation of a Circular Economy for Plastics (BioICEP) is a pan European-Chinese collaboration formed to reduce the burden of plastic waste in the environment. BioICEP will focus on triple-action depolymersisation startegtgy to accelerate the degradation plastics waste and there by creating value added building blocks to create new polymers and other products to enable new plastic waste based circular economy.

Overview of the Role:

An experienced researcher is required to drive the multidisciplinary project in developing novel combination of mechano-biochemical process for the degradation of plastics using ultrasonication, supercritical carbon dioxide, UV-assisted photo degradation, reactive extrusion and microwave degradation. The Project will require processing knowledge of various fossil based polymers such as HDPE, LDPE, PP, PET and biobased polymers such as PLA, PBT, PHB etc.

Standard Duties and Responsibilities of the Post

The post holder will be responsible for :

i) Developing the characterisation methods for mixed plastic waste systems and supply the samples to consortium partners
ii) Develop the pre-treatment technologies for mixed plastic waste systems based on mechanical, thermal and microwave technologies
iii) Analysis of degradation polymer products using various characterisation tools.
iv) 3D printing of polymer blends created from the waste plastic mix.

As a part of the project, it is essential to engage with consortium partners based in Europe and china on regular basis to coordinate various activities of the project including timely submission of technical reports to European commission.

The core tasks are as follows:

- Melt Processing and characterisation of mixed plastic (polymers) systems
- Use of Ultrasonication and UV –photo degradation technologies for polymer degradation
- 3D printing of polymers using FDM and other processing technologies.
- Characterisation of composites for barrier, mechanical, thermal and distribution of nanoadditives by SEM, TEM, and Raman spectroscopies.
- Analysing the thermal (TGA, DSC, DMA) and mechanical properties of the composites using various analytical techniques.
- Knowledge of life cycle analysis (LCA)
- Developing the protocols to assess the degradation of mixed plastic systems.
- Co-ordinating with various stake holders of the project
- Writing scientific papers, reports and giving presentations on the research conducted.

Funding Information

This position is funded through a European Union under H2020 programme.

Person Specification

Qualifications

The experience candidate must have a PhD in a relevant field such as chemistry, polymer science and Engineering/materials science, chemical Engineering or physics and/or equivalent industrial experience.

Knowledge & Experience (Essential & Desirable)

Essential

1. The candidate must have a primary degree in an appropriate field such as chemistry or physics with a relevant postgraduate qualification or equivalent industrial experience.
2. The candidate must have strong background and experience in use of ultrasonication technology, thermal and photo degradation for degradation of polymers .
3. Knowledge of melt processing of polymers using lab scale extruders.
4. Candidates must have demonstrated a proven knowledge of Materials Science with the ability to solve challenging problems related to the development of polymer processing, polymer degradation, polymer characterisation and 3D printing.
5. Must have working experience with Thermal Analysis (TGA, DSC, DMA), FT-IR, GPC, Melt Flow Index, optical and electron microscopy of polymeric materials to generate data to provide insight into the composition of polymeric materials.
6. Must be a self-determined individual with a capacity to apply new, pre-existing or adjacent technologies to problem solving with minimal supervision.
7. Good leadership skills with the ability to maintain excellent working relationships with both internal and external partners is also required.
8. Strong communication and interpersonal skills, both written and verbal.
9. Excellent written and oral proficiency in English (essential)

Desirable

1. Experience in polymer degradation mechanisms, characterisation and processing of polymers using melt extrusion and 3D printing.
2. Experience of working with industrial collaborators
3. Experience in the training and supervision of junior researchers is desirable.
4. Life cycle analysis (LCA) of Materials and processes

Skills & Competencies

1. Polymer Processing, characterisation and Life Cycle Analysis (LCA)
2. Proven ability to prioritise workload and work to exacting deadlines
3. Excellent communication and written Skills.

Further Information for Applicants

In order to assist the selection process, applicant should submit a Curriculum Vitae and a cover letter that specially address how the candidate skills and experience align with the criteria set out above. **Applicants should reference RF-BioICEP in their application.**

URL Link to Area	www.tcd.ie
URL Link to Research Group	https://www.tcd.ie/Physics/research/groups/pmnc/
URL Link to Human Resources	https://www.tcd.ie/hr/

Send CV to babup@tcd.ie