Post Specification

Post Title:	**Research Fellow in Separation technologies**– Only approved titles may be used – for further information please see the Academic Titles Document https://www.tcd.ie/hr/assets/pdf/Academic_Titles.pdf
Post Status:	2 years with possible extension for year 3:Specific Purpose Contract – Full-time
Research Group /Department/School:	Polymeric Materials & NanoComposites (PMNC) Group, AMBER/School of Physics, Trinity College Dublin, the University of Dublin
Location:	**CRANN Institute, Main Campus** Trinity College Dublin, the University of Dublin College Green, Dublin 2, Ireland
Reports to:	Dr Ramesh Babu P (Principal Investigator)
Salary:	Appointment will be made on Points 2-6 of the IUA Post-Doctorate Researcher Level 2 salary scale, (€37,013-€ 42,181 per annum) at a point in line with Government pay Policy and experience. Please use the relevant IUA Researcher Salary Scales – further information is available at http://www.iua.ie/research-innovation/researcher-salary-scales/
Closing Date and Time:	**12 Noon (GMT) on 31 January 2018**

Post Summary

Background

Polymeric Materials and NanoComposites (PMNC) group (**http://physics.tcd.ie/pmnc/**) at TCD led by Dr. Ramesh Babu. The mission is to provide world-class research in Polymeric Materials and separation sciences, to act as an intellectual powerhouse and a catalyst for the development of a smart, globally competitive industry sector in Ireland and Europe. The overarching performance target of the group is to provide the R&D capability that will allow industries to become involved in the use of the most advanced polymeric materials and tools to create smart products and technology to compete effectively in all markets. We undertake a variety of research and development activities in pursuit of this goal including developing novel technologies, analysis, formulation, characterisation, and technology transfer of polymer nanocomposites, separation technologies, bio-based polymers, conducting polymers and electrospun materials.

Overview of the Role:

An experienced researcher is required in the area of separation technologies for a European Union Funded Bio-based Industries innovation action flagship project (BBI-IA-FLAG) **Agrichemwhey-** An integrated biorefinery for the conversion of dairy side streams to high value bio-based chemicals. The scope of Agrichemwehy project is to demonstrate at industrial scale the recovery of valuable bio-molecules from food processing products or waste streams and their conversion into high added-value products of suitable quality to meet the market requirements. This current project mainly focuses on developing the separation/recovery process for lactic acid produced by fermentation process. This project involves the scaling the separation technologies to commercial scales (TRL 7-8) working in hand in hand with industrial partner for recovery of lactic acid from fermentation broths using various separation technologies e.g. membranes, ion exchange resins, chromatographic resins and other suitable technologies.

Standard duties and Responsibilities of the Post

The post holder will be responsible for developing the continuous separation processes for the recovery of purified lactic acid and also developing the procedures for separation of racemic forms lactic acid. This project required working knowledge of ICP-MS, GC-MS, HPLC, UV-Vis, Protein, vitamin and amino acid analysis, and other another analytical tools to determine the purity of lactic acid. He/she will be expected to take on the day-to-day running of the part of the research programme under the direction of Dr. Ramesh Babu.

The core tasks are as follows:

1. Evaluation of various MF/UF/NF/RO /PV membranes at the various stages of Lactic acid separation at the lab scale.
2. Evaluation of various ion-exchange resins for the removal of potential metal slats contaminants
3. Characterisation of lactic acid purity by GC-MS and enzyme assay kits
4. Scaling up lab scale procedure for pilot scale/demo scale for large scale production of lactic acid
5. Writing papers and giving presentations on the research conducted.

6. Willing to travel to partners sites for scaling and demonstration of technologies
7. Helping with day-to-day running of the research group, training and supervising the students, procuring orders and managing the laboratories.

Funding Information:

Bio Based Industry consortium (BBI-JU) and European Commission

Person Specification

Qualifications

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

Knowledge & Experience (Essential & Desirable)

Essential

- Evaluation of various MF/UF/NF/RO /PV membranes at the various stages of Lactic acid separation at the lab scale.
- Evaluation of various ion-exchange resins for the removal of potential metal slats contaminants.
- Separation of sugars from fermentation streams using membranes or ion exchange resins
- Working knowledge of ICP-MS, GC-MS, HPLC, UV-Vis, protein, vitamin and amino acid analysis, and other another analytical tools to determine the purity of lactic acid
- Characterization of lactic acid purity by GC/LC-MS and enzyme assay kits
- Scaling up lab scale procedure for pilot scale/demo scale for large scale production of lactic acid
- Writing papers and giving presentations on the research conducted.
- Willing to travel to partners sites for scaling and demonstration of technologies
- Helping with day-to-day running of the research group, training and supervising the students, procuring orders and managing the laboratories.
- Good leadership skills with the ability to maintain excellent working relationships with both internal and external partners is also required
- Excellent communication and written skills

Desirable

1. Experience in organic chemistry and synthesis of lactic acid based derivatives will be added advantage.
2. Experience of working with industrial collaborators.
3. Experience in the training and supervision of junior researchers is desirable.

Further Information for Candidates

For additional details on these research positions please contact:

Dr.Ramesh Babu
School of Physics
Trinity College Dublin
Phone: +353-1-896 2602
Email: babup@tcd.ie

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

GARDA CLEARANCE:

Police vetting will be sought in respect of individuals who come under consideration for a post.

PLEASE NOTE: Candidates will be required to complete and return a Garda Vetting form should they come under consideration for appointment. In some cases they may be requested to complete the form on the day of interview. This form will be forwarded to An Garda Síochána (Irish Police) for security checks on all Irish addresses at which they have resided. An Garda Síochána will make enquiries with the Police Service of Northern Ireland with respect to addresses in Northern Ireland. If a candidate is not successful in obtaining the post for whatever reason, this information will be destroyed. If a candidate, therefore, subsequently comes under consideration for another position, they will be required to supply this information again.

While candidates must complete information in relation to all addresses at which they have resided, the vetting is only done on addresses on the island of Ireland.

If a candidate has resided / studied in countries outside of Ireland for a period of 6 months or more, it is mandatory for them to furnish a Police Criminal Records Check/ Police Certificate from those countries stating that they have no convictions recorded against them while residing there. Candidates will need to provide a separate Police Criminal Records Check/ Police Certificate for each country in which they have resided. The Police Criminal Records Check/ Police Certificate must be dated after the date the candidate left the relevant country. Candidates should provide documentation in the English and/or Irish language. Translations must be provided by a registered translation company/institute in the Republic of Ireland; all costs will be borne by the candidate. Only original version documents will be accepted.

Candidates should be aware that any information obtained in the Garda Vetting process can be made available to the employing area.

It is the responsibility of the candidate to seek security clearances in a timely fashion as they can take some time. No candidate will be appointed without this information being provided and being in order. The following websites may be of assistance in this regard:

www.disclosurescotland.co.uk

www.psni.police.uk

www.afp.gov.au

This website provides information on obtaining a national police clearance certificate for Australia

www.courts.govt.nz

This website provides information on obtaining police clearance in New Zealand.

For other countries not listed above candidates may find it helpful to contact the relevant embassies who could provide information on seeking Police Clearance. Original Police Clearance documentation should be forwarded to Human Resources where it will be copied and the original returned to the candidate by post. Any cost incurred in this process will be borne by the Candidate

AMBER Overview

AMBER (Advanced Materials and BioEngineering Research) is a Science Foundation Ireland funded centre that provides a partnership between leading researchers in materials science and industry. Materials science has been described as the science of stuff! We are researching materials that will transform everyday products of the future, from mobile phones to knee implants, batteries to beer bottles. AMBER links industry to research programmes and the aim of the centre is to develop products that directly impact everyone's quality of life such as the development of the next generation computer chips and new medical implants and pharmaceuticals that will improve patient care.

AMBER is jointly hosted in Trinity College Dublin by CRANN and the Trinity Centre for Bioengineering, in collaboration with University College Cork and the Royal College of Surgeons in Ireland. AMBER brings together Ireland's leading material science researchers working across the disciplines of Physics, Chemistry, Bioengineering and Medicine; with an international network of collaborators and companies.

The Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN) comprises a team of over two hundred and fifty researchers from 45 different countries, led by eighteen principal investigators and seventeen investigators, each of whom is an internationally recognised expert in his/her field of research. CRANN principal investigators are based across multiple disciplines including physics, chemistry, medicine, biochemistry and immunology, engineering and pharmacy. CRANN works at the frontiers of nanoscience developing new knowledge of nanoscale chemical and physical phenomena, with a particular focus on new device and sensor technologies for ICT, biotechnology and medical sectors.

CRANN hosts the new Science Foundation Ireland Research Centre AMBER- a €60M euro state-enterprise investment in material research and innovation. AMBER will partner with industry and

acedemia in co-developing materials solutions. AMBER (Advanced Materials and BioEngineering Research) is a Science Foundation Ireland funded centre that provides a partnership between leading researchers in material science and industry. It is jointly hosted in

Trinity College Dublin (TCD) by CRANN and the Trinity Centre for Bioengineering (TCBE), in collaboration with University College Cork and the Royal College of Surgeons in Ireland (RCSI).

This centre will deliver internationally leading materials research that will be industrially and clinically informed with outputs including new discoveries and devices in ICT, medical device and industrial technology sectors. AMBER has a strong emphasis on linking industry to research programmes and the aim of the centre is to develop products that directly impact everyone's quality of life such as the development of the next generation computer chips and new medical implants and pharmaceuticals that will improve patient care. AMBER brings together Ireland's leading material science researchers working across the disciplines of Physics, Chemistry, Bioengineering and Medicine; with an international network of collaborators and companies.

CRANN has two state-of-the art buildings both custom designed and constructed for the purpose of leading edge nanoscience research. The Naughton Institute is a 6000m2 research facility on the campus of TCD. The CRANN Advanced Microscopy Laboratory (AML) was completed in 2009. This facility is on Pearse Street and houses Ireland's most advanced microscopy instrumentation, enabling Ireland to compete internationally in terms of this capability. The impact is being measured in terms of Ireland 8th place ranking in materials science, of which over 70% of the cited publications are linked to CRANN and its partner schools.

Through its SFI funded Centre for Science, Engineering and Technology (CSET), CRANN has a specific remit to work with industry. CRANN presently has active research engagement with over seventy companies in Ireland and Europe, including multinationals such as Intel and HP and indigenous companies such as Cellix and Eblana Photonics. CRANN has also been very successful in obtaining non-Exchequer funding (e.g. European Union Frameworks) that enabled the establishment of an extensive academic partnership network involving over 100 European universities and 160 universities globally.

On a national basis CRANN leads the INSPIRE consortium (www.inspirenano.com) which comprises the foremost nanoscience researchers in Ireland based across eight academic institutions. CRANN, in partnership with the Tyndall National Institute, will co-host the Competence Centre for Applied Nanotechnology. This is a new initiative to enable research provider organisations to partner one another on an industry defined research programme.

CRANN has been funded predominately by Science Foundation Ireland and has also obtained competitive funding from the Higher Education Authority, Enterprise Ireland, industry, the EU commission through FP6 and FP7 and philanthropic sources, notably Dr Martin Naughton.

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Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Trinity College Dublin, the University of Dublin

Founded in 1592, Trinity is at the nexus of tradition and innovation, offering undergraduate and postgraduate programmes across 24 schools and three faculties: arts, humanities, and social sciences; engineering, maths and science; and health sciences. Spread across 47 acres in Dublin's city centre, Trinity's 17,000-strong student body comes from all 32 counties of Ireland, and 16% of students come from outside the country. Of those, 40% are from outside the European Union, making Trinity's campus cosmopolitan and bustling, with a focus on diversity.

As Ireland's leading university, the pursuit of academic excellence through research and scholarship is at the heart of the Trinity education. Trinity is known for intellectual rigour, excellence, interdisciplinarity, and research-led teaching. Home to Nobel prize-winners such as scientist Ernest Walton and writer Samuel Beckett, Trinity draws visitors from across the world to its historic campus each year, including to the Book of Kells and Science Gallery which capture the university's connection to both old and new.

Trinity accounts for one-fifth of all spin-out companies from Irish higher education institutions, helping to turn Ireland into an innovation-intensive, high-productivity economy. That culture of innovation and entrepreneurship is a defining characteristic of our campus as we help shape the next generation of job creators.

Trinity has developed significant strength in a broad range of research areas, including the 19 broadly based multi-disciplinary thematic research areas.

Ireland's first purpose-built nanoscience research institute, CRANN, houses 150 scientists, technicians and graduate students in specialised laboratory facilities. Meanwhile, the state-of-the-art Biomedical Sciences Institute is carrying out breakthrough research in areas such as immunology, cancer and medical devices.

The Old Library, which houses the Long Room, in Trinity is the largest research library in Ireland, with a collection of six million printed items, 500,000 maps, 80,000 electronic journals, and 350,000 electronic books. Some of the world's most famous scholars are graduates of Trinity, including writer Jonathan Swift, dramatist Oscar Wilde, philosopher George Berkeley, and political philosopher, and political theorist Edmund Burke. Three Trinity graduates have become Presidents of Ireland - Douglas Hyde, Mary Robinson and Mary McAleese.

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Trinity is the highest ranked university in Ireland, and among the world's leading higher education institutions.

Trinity College Dublin World University Rankings

Overall

- Trinity is Ireland's No.1 University in the QS World University Ranking, THE World University Ranking and the Academic Ranking of World Universities (Shanghai).
- Trinity is ranked 71st in the World and 21st in Europe in the 2013/2014 QS World University Ranking across all indicators.

Internationalisation

- Trinity is ranked 44th in the World in the Times Higher Education Top 100 Most International Universities.
- Trinity is 46th in the World in the QS World University Ranking 2013/2014 in terms of International Faculty.

Research Performance

- Trinity is ranked in the top 70 universities in the world in the Times Higher Education Ranking of World Universities in terms of overall research and in the top 75 universities in the world in terms of citations (research impact).
- Trinity ranks in the top 1% of research institutions in the world in the following 17 Essential Science Indicators fields (an increase of over 150% from 2004): Physics, Chemistry, Engineering, Social Sciences (General), Immunology, Neurosciences, Nanosciences, Materials Science, Pharmacy and Toxicology, Molecular Biology and Genetics, Biology and Biochemistry, Microbiology, Plant and Animal Science, Clinical Medicine, Agriculture, Psychiatry/Psychology, Environment/Ecology.

In the QS Faculty Rankings 2015*:

- Trinity is ranked 63rd in the world in Arts and Humanities.
- Trinity is ranked 69th in the world in Life Sciences and Medicine.
- Trinity is ranked 89th in the in Social Sciences and Management.

In the QS Subject Rankings 2015:**

Trinity College Dublin features in the world's elite (Top 200) institutions in 25 of the 28 subjects in which it was evaluated by the QS World University Rankings by Subject 2015. Of these, Trinity ranks in the top 100 in the world in 14 subjects and in the top 5 in the world in 5 subjects.

Top 50

- Trinity is ranked 32nd in the world in English Language and Literature.
- Trinity is ranked 33rd in the world in Politics and International Studies.
- Trinity is ranked 39th in the world in History.
- Trinity is ranked 48th in the world in Biological Sciences.
- Trinity is ranked 49th in the world in Modern Languages.

Top 100

- Trinity is in the top 100 in the world in Chemistry.
- Trinity is in the top 100 in the world in Computer Science and Information Systems.
- Trinity is in the top 100 in the world in Education.
- Trinity is in the top 100 in the world in Geography.
- Trinity is in the top 100 in the world in Law.
- Trinity is in the top 100 in the world in Medicine.
- Trinity is in the top 100 in the world in Pharmacy and Pharmacology.
- Trinity is in the top 100 in the world in Philosophy.

- Trinity is in the top 100 in the world in Psychology.

Trinity subjects ranked in the world top 101-200 (QS Subject Ranking 2015)

Subject	Trinity Rank
Accounting and Finance	101-150
Business and Management Studies	101-150
Economics and Econometrics	101-150
Linguistics	101-150
Physics and Astronomy	101-150
Sociology	101-150
Engineering - Civil and Structural	151-200
Engineering – Electrical	151-200
Engineering – Mechanical	151-200
Environmental Sciences	151-200
Mathematics	151-200

* QS 'Faculty' Rankings 2015: www.topuniversities.com/faculty-rankings

** QS Subject Rankings 2015: www.topuniversities.com/subject-rankings

Pension Entitlements

This is a pensionable position and the provisions of the Public Service Superannuation (Miscellaneous Provisions) Act 2004 will apply in relation to retirement age for pension purposes. Details of the relevant Pension Scheme will be provided to the successful applicant.

Applicants should note that they will be required to complete a Pre-Employment Declaration to confirm whether or not they have previously availed of an Irish Public Service Scheme of incentivised early retirement or enhanced redundancy payment.

Applicants will also be required to declare any entitlements to a Public Service pension benefit (in payment or preserved) from any other Irish Public Service employment.

Applicants formerly employed by the Irish Public Service that may previously have availed of an Irish Public Service Scheme of Incentivised early retirement or enhanced redundancy payment should ensure that they are not precluded from re-engagement in the Irish Public Service under the terms of such Schemes. Such queries should be directed to an applicant's former Irish Public Service Employer in the first instance.

Employment Permit Eligibility Criteria

Applications from non-EEA citizens are welcomed. However, eligibility is determined under the relevant regulations of the Department of Jobs, Enterprise and Innovation. Trinity, as an accredited research organisation, can form Hosting Agreements with third country nationals (Non-EEA nationals) for the purposes of conducting research in the University. Non-EEA candidates should note that the onus is on them to secure a visa to travel to Ireland prior to interview. Non-EEA candidates should also be aware that even if successful at interview, an appointment to the post is contingent on the securing of a Hosting Agreement or Employment Permit as appropriate. See https://www.djei.ie/en/What-We-Do/Research-Innovation/Hosting-Agreement-Scheme/

Equal Opportunities Policy

Trinity College is an equal opportunities employer and is committed to employment policies, procedures and practices which do not discriminate on grounds such as gender, civil status, family status, age, disability, race,

religious belief, sexual orientation or membership of the travelling community.

On that basis we encourage and welcome talented people from all backgrounds to join our staff community.

Trinity College's Diversity Statement can be viewed in full at https://www.tcd.ie/diversity-inclusion/diversity-statement

Application Procedure

Candidates should submit a cover letter together with a full curriculum vitae to include the names and contact details of 3 referees (email addresses if possible) to:

Name:

Title:

Email Address:

Contact Telephone Number: