



Post Specification

Post Title:	Research Fellow in Separation Technologies
Post Status:	1 year contract; Available immediately
Department/Faculty:	AMBER/ School of Physics
Reports to:	Dr Ramesh Babu P
Location:	CRANN, Main Campus
Salary:	Appointment will be made on Points 1-3 of the IUA Post-Doctorate Researcher Level 2 salary scale, (€37,750-€ 40,003 per annum) at a point in line with Government pay Policy
Closing Date:	12 Noon (GMT) on Wednesday 07 th April 2017

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 companies 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, manufacturing, testing, applications 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 for an Industry driven project in the area of separations/membrane filtration and Ion exchange for purification and improving the nutritional value of milk protein fractions. This project involves the evaluation of various commercial membranes and ion-exchange resins along with other processes to develop more economical and industrial feasible process for demineralised milk fractions for various food supplement applications.



Responsibilities/duties

The post holder will be responsible for developing scalable continuous process for the production of de-mineralised milk protein fractions with low levels of specific sugars. This Project will require working knowledge of GC-MS, HPLC-RI, ICP-MS and other analytical tools to characterise the properties of de mineralised milk proteins using TEM, FT-IR, Rheometry and Zetasizer. 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 commercial UF/NF/RO membranes and ion-exchange resins for the removal of minerals and specific sugars from milk protein fractions.
2. Characterisation of Milk fraction purity by GC-MS, HPLC, ICP-MS, enzyme assay kits and other analytical tools.
3. Developing and scaling up lab scale procedure for demonstration
4. Writing papers and giving presentations on the research conducted.
5. Helping with the day-to-day running of the research group, training and supervising students, procuring orders, managing the laboratories.

Person Specification:

Essential

1. The candidate must have a PhD in a relevant field such as chemistry/ dairy technology/biochemistry/chemical Engineering or physics and/or equivalent industrial experience.
2. Candidates must have demonstrated a proven knowledge of membrane separations, using ion exchange resins and cavitation processes for purification/ recovery of milk protein with the ability to solve challenging problems related to improving the nutritional value of milk protein.
3. Must have working experience with GC-MS, HPLC, ICP-MS, TEM/SEM and enzyme based analysis kits.
4. Must be a self-determined individual with a capacity to apply new, pre-existing or adjacent technologies to problem solving with minimal supervision
5. Good leadership skills with the ability to maintain excellent working relationships with both internal and external partners is also required.
6. Excellent communication and written skills.



Desirable

1. Experience in processing of milk proteins and characterization 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	http://physics.tcd.ie/pmnc/ ; http://ambercentre.ie/people/dr-ramesh-babu-padamati

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 academia 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.

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

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: Dr Ramesh Babu
Address: School of Physics
Trinity College Dublin
Dublin 2
Ireland
Email Address: babup@tcd.ie



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