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# Researcher - Simulating Polymer Materials for Medical devices

## MN-12 Researcher - Simulating Polymer Materials for Medical devices

### Contract: Full Time/Fixed Term

A 16-month postdoctoral researcher position is available under the supervision of [Dr. Michael Nolan](#) in the Tyndall National Institute, University College Cork. This position involves simulating polymer materials for medical devices.

The Tyndall National Institute is a world leader in the application of materials modelling to industry problems. Working closely with a global industry player in medical devices and academic partners in molecular layer deposition, we provide rational design of materials and their growth across a range of technologies.

This project leverages are strengths in materials modelling and active collaborations in Europe to deliver breakthroughs in polymer film design and deposition.

**The successful postdoctoral researcher will play the key technical role in the newly funded Enterprise Ireland Innovation Partnership Project, ThinCoat.** The work involves running first principles simulations and molecular dynamics simulations of a range of polymer materials to explore their tribological properties to predict new polymers for low-friction coatings in catheter devices.

In addition to this the researcher will work on modelling deposition of these films through molecular layer deposition in collaboration with [Prof. Mato Knez at CICNanoGune](#) in Spain. Extensive travel to the industry partner, involving experience in the work environment and characterisation, as well as to Spain to forge and develop the linkages between the project partners will be required.

The researcher will be expected to write scientific papers, present at international conferences and workshop and represent Tyndall at project meetings and drive the project work forwards.

### Key Responsibilities

- To work under the direction of the Principal Investigator/Project Leader.
- To provide assistance in conducting relevant research activities, including planning, organising, conducting, and communicating research studies within the overall scope of the research project.
- Undertake DFT level simulations of polymer materials
- Devise a workflow for DFT simulation of tribology
- Undertake DFT level simulations of MLD processes
- Undertaken molecular dynamics simulations of models of polymer films
- To coordinate and perform a variety of independent and team activities involved in the collection, analysis, documentation and interpretation of information/results.
- To undertake tasks which may include recording results and preparing reports including conclusions and recommendations. Application of qualitative and quantitative research techniques in polymer materials modelling.
- To engage in appropriate training and professional development opportunities as required by

the Principal Investigator, School or College in order to develop research skills and competencies.

- To co-supervise postgraduate research students who are studying for a Masters or a PhD and have an agreed role in supporting these students in their day to day research.
- To carry out administrative work to support the program of research and ensure all project deliverables and milestones are achieved in a timely manner.
- To disseminate project outputs, through the interpretation of results and the preparation of manuscripts for publication.
- To work with project partners to identify their needs and explain project results, travelling to partners as needed.
- Participate in Education and Public Engagement activities, as required.
- Ensure all activities are compliant with the Tyndall Quality Management system.
- Ensure all activities are compliant with the required Health and Safety standards.
- Carry out any additional duties as may reasonably be required within the general scope and level of the post.

### Essential Criteria

- Experience in DFT level simulations
- PhD viva successfully passed
- Track record of scientific publications and presentations
- Experience with industry interactions
- Willingness to work directly with industry partners are required.
- A demonstrated capability in the delivery of research projects at undergraduate or postgraduate level.
- Capability of working effectively within a team to achieve results.
- Excellent verbal and written communication skills
- High levels of initiative, project management, self-management, achievement-orientation, and motivation are encouraged.

This is a fulltime Post-doctoral Researcher opportunity in University College Cork, with the successful candidate on approved IUA salary Scales for postdoctoral Researchers, initially for 16 months with the possibility of extension beyond that.

Informal enquiries can be made in confidence to Michael Nolan at [michael.nolan@tyndall.ie](mailto:michael.nolan@tyndall.ie)

Appointment may be made on the Post-doctoral Researcher Scale €37,873 - €45,041 depending on qualification and experience.

### Application Instructions

**Step 1 - Please click [here](#) to download the application form and indicate MN-12 as the Job Reference**

**Step 2 - Return the completed application form, together with your CV, motivation letter and references to [careers@tyndall.ie](mailto:careers@tyndall.ie). Handwritten forms will not be accepted.**

Please note that Garda vetting and/or an international police clearance check may form part of the selection process.

The University, at its discretion, may undertake to make an additional appointment(s) from this competition following the conclusion of the process.

At this time, Tyndall National Institute does not require the assistance of recruitment agencies.

Tyndall National Institute at University College, Cork is an Equal Opportunities Employer.