

4-year Funded PhD in Ultramicroscopy

The Ultramicroscopy Research Group, based at the Advanced Microscopy Laboratory – Trinity College Dublin, is offering one fully funded PhD position (4 years, stipend plus EU fees) for September 2021 start in the area of high-precision structural imaging of materials at the picometre scale.

The scanning transmission electron microscopy (STEM) facilities available at Trinity College Dublin are capable of imaging materials down to the atomic level. A high energy beam of electrons is concentrated to a spot less than 80 pm in diameter, scanned across a sample and atomic resolution images of scattering and spectroscopy signals can be collected. This makes STEM an indispensable technique for modern materials science and nanotechnology. However, the scanned nature of the acquisition, and the concentrated beam of electrons, presents difficulties in time resolution and specimen damage. The Ultramicroscopy Group is pushing developments in state-of-the-art beam-scanning strategies and hardware to mitigate this and advance the next generation of STEM.

This project will combine with the group's recent developments and apply them to materials science problems in fields such as ferroelectricity. We are targeting the highest possible precision data with the least possible beam damage. We are keen to make use of our new, state-of-the-art segmented detector for differential phase contrast imaging. With this we want to push spatial and temporal resolution as well as quantitative measurements of electromagnetic fields. Quantitative assessment of data fidelity will be key and critical thinking skills will be essential.

The ideal applicant will have a 1st Class Honours Master's or Bachelor's degree in Physics, Materials Science or related disciplines. Previous experience with electron microscopy or computer programming would be advantageous but not essential. The researcher will work closely with other members of a multidisciplinary project team. Excellent written and oral communication skills are essential.

Further Details:

This project will be supervised by Dr Jonathan Peters and Prof Lewys Jones. A stipend of €18,500 p.a. will be paid to the student (paid monthly). Fees are provided up to the EU fee level. Non-EU students will need to provide the fee difference.

Applicants should email a cover letter (1 page max.) and CV (2 pages max) to lewys.jones@tcd.ie. Applications will close at **5pm Friday 9th July**. We hope to shortlist and interview very soon after.

The Ultramicroscopy Group and the School of Physics welcomes applications from all qualified candidates, and applications are particularly encouraged from all genders/ethnicities/backgrounds traditionally under-represented in Physics.

Research Group Webpage: <https://www.tcd.ie/Physics/research/groups/ultramicroscopy/>

Vacancy webpage: <https://www.tcd.ie/Physics/research/groups/ultramicroscopy/positions/>

The School of Physics, Trinity College Dublin has been awarded Institute of Physics Juno Practitioner and Athena SWAN Bronze Award status for taking action to address gender inequities across its student and staff body. It is committed to promoting better working practices for men and women. See <https://www.tcd.ie/Physics/womeninphysics/>.