

One of the new themes selected for the “EPSRC Universities for Nottingham CDT in Resilient Chemistry” is called **Non-Thermal plasma promoted bulk chemical synthesis**. **Three fully funded PhD scholarships** are available to start in October 2025.

Non thermal plasmas (NTPs) present exciting new opportunities to inject energy into reacting chemical systems using clean renewable electricity. Opportunities to both make and break bonds (that would be hard to achieve with traditional heating or photochemical activations) abound. However these are presently rarely investigated – particularly in NTP-catalyst promoted processes. Industry is desperate to enact such new leading-edge ‘cold plasma’ promoted transformation in organic synthesis and catalysis, but the basic research needed to achieve this is missing. Our theme is dedicated to both explore the basics of these exciting new opportunities in the chemical sciences and to develop new enabling chemical transformations.

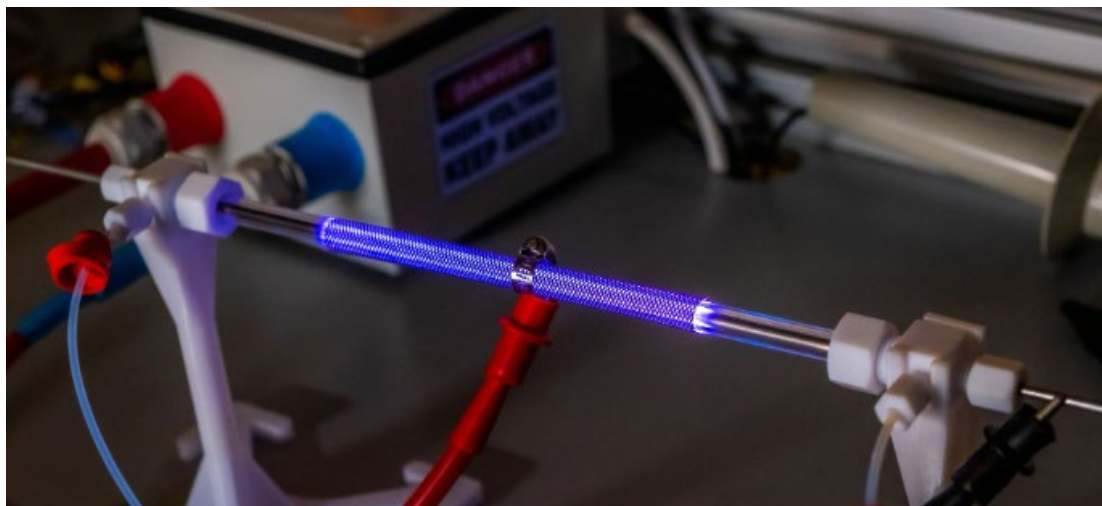


Figure 1: NTP-catalysis is a novel technology driving innovation in sustainability in chemical processes, for instance in [CO₂ reduction](#)

NTP is a partially ionized gas consisting of high energy electrons with ions, radicals and other excited species remaining close to room temperature. This non-equilibrium nature of the plasma allows synthesis through activation of stable molecules like N₂ and CO₂. The effect is further enhanced through catalysis. The synergy that arises has shown selectivity in the chemical pathways that are unlocked. This multidisciplinary theme on NTP catalysis investigates and optimizes this for a variety of (industrial) chemical processes that are currently energy intensive and unfeasible at room temperature conditions unlike NTP.

Potential PhD projects could involve:

- Discovery of new catalytic processes for attaining nitrogen-containing organic compounds
- Selective functionalisation of organic molecules via C-X (X = H, heteroatom) activation
- Preparation and functionalization of new types of polymers
- Understanding and optimisation of NTP-catalyst interactions and activations
- Surface and materials processing
- Control of environmental pollutants
- Carbon dioxide reduction and use

Research staff involved: [Elmar Slikboer](#) (NTU, lead), [George Dimitrakis](#) (UoN), [Demos Koutsogeorgis](#) (NTU), [Anabel Lanterna](#) (UoN), [Valeria Puddu](#) (NTU), [Pete License](#) (UoN) and [Simon Woodward](#) (UoN)



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Fully Funded 48-month PhD studentships at the EPSRC Universities for Nottingham CDT in Resilient Chemistry

12 PhD Scholarships available to start October 2025 for 4 themes. All information, including about the Cold Plasma Catalysis theme, can be found on the [CDT website](#).

We invite suitably qualified and highly motivated applicants from **STEM disciplines** to apply for a series of multidisciplinary PhD scholarships hosted by the University of Nottingham and Nottingham Trent University at the [EPSRC Universities for Nottingham CDT in Resilient Chemistry](#).

In partnership with leading industrial stakeholders, we are launching a new collaborative approach to PhD projects. Our PhD projects will develop skills targeting the urgent need in transition to sustainable chemicals manufacturing. Our projects will define the next generation of multidisciplinary innovators driving the technologies and chemistries needed for Net-Zero economies.

Successful candidates will benefit from a **fully funded 4-year** scholarship, which includes: fees, stipend (25/26 UKRI rate) and Research Training Support Grant.

For 2025 entry, a limited number of studentships funded by UKRI (EPSRC) are available to international students, in accordance with current [UKRI guidance](#).

Application criteria

Ideally, candidates will hold one of the following:

- A minimum of an upper second-class honours' degree from a 4-year undergraduate course (or equivalent), in a STEM based subject, which may include: Chemistry, Biochemistry, Physics, Material Science, Natural Sciences, Biotechnology, Pharmacy, Chemical Engineering, Environmental Engineering, Pharmacy, Synthetic Biology, Computational Biology/Chemistry or a related subject
- A 3-year undergraduate course in one of the above disciplines plus a master's degree and/or some experience in industry

We particularly welcome enthusiastic and highly motivated applicants with a strong academic curiosity and aptitude for research. Applicants should be committed to working in cross-disciplinary teams and be passionate about working towards a more sustainable future.

If English isn't your first language, you will also need to meet the relevant English language requirements. An IELTS score of 6.5 (no less than 6.0 in any element) is required, although we also accept alternative qualifications. A limited number of fully funded studentships will be made available in accordance with current UKRI guidance.

Our partnership is committed to providing an inclusive study environment for all students. We welcome applications from candidates from different backgrounds and protected characteristics, including those from BAME backgrounds. We are dedicated to a diverse and inclusive research culture that is characterised by fairness and equality of opportunity for all.

We offer flexibility in provision of student support including disability support plans and mechanisms to accommodate those with caring responsibilities including maternity and paternity leave.

Deadlines

Application deadline: 28 March 2025 – 5pm (extra application round expected tba soon)

Interviews: To take place during April/May 2025

Please complete the following forms:

- [Application Guide 2025](#)
- [PG Ref Form](#)
- [CDT-Application 2025](#)

Email completed forms to cdt-suschem@nottingham.ac.uk