



the extensive and ubiquitous role of polycyclic aromatic hydrocarbons in space



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EUROPAH is a European Training Network (ETN) funded by the European Commission under the Horizon 2020 Marie Skłodowska-Curie Action. 13 research groups, spread across 10 universities and 3 industrial partners in 6 different countries have come together to train a new generation of astrophysicists through an EU-wide PhD training network.

The joint scientific research goal is to understand the role that polycyclic aromatic hydrocarbons play in the physics and chemistry of the interstellar medium of galaxies.

Polycyclic aromatic hydrocarbons (PAHs) are universally ubiquitous and lock-up close to 15% of the elemental carbon in space. They play a key role in maintaining the ionization balance and in the heating of interstellar gas; hence controlling the phase structure of the interstellar medium (ISM) of galaxies and regulate star formation. PAHs are also central to the chemical complexity of space and the organic inventory of regions of star and planet formation. On Earth, PAHs are pernicious pollutants affecting the atmosphere and aquatic environments. Understanding PAHs and their multitude of roles in the Universe is thus a key question in both astrophysics and terrestrial chemistry.

What is offered The EUROPAH consortium has been running since 2016 and is populated by 16 early-stage researchers (ESRs). One position is currently available and we offer a 12-month contract to fill this position. A project description for this position is provided on page 2. EUROPAH is a highly multidisciplinary network that combines astronomy, molecular physics, molecular spectroscopy, environmental science, quantum chemistry, surface sciences, plasma physics and scientific communication. The successful candidate will join the final year of the EUROPAH training program aimed at developing a research-oriented, creative and innovative mindset.

Who can apply Details on the position are provided below. To qualify as an ESR in the EUROPAH network you must:

- have the background and expertise required for the position as described below
- be in the first four years* of your research career, since, *e.g.*, completion of your undergraduate degree,
- not already possess a doctorate degree,
- be willing to move to, and be eligible to work in, the UK, and not have not lived in the UK for more than 12 months over the last 3 years,
- be proficient in both written and spoken English.

This information is also available through the EUROPAH website at www.europah.eu

What to do Please forward a 2-page CV and 1-page cover letter to recruitment@europah.eu by the deadline: 15th September 2019.

* full-time equivalent research experience

ESR position 10 and project title: Non-thermal plasma decomposition of PAHs: Understanding the reaction pathways and mechanisms

Host Institute: *Department of Electrical Engineering and Electronics, University of Liverpool*

Host Country: UK

Start date: *1st Oct 2019*

The candidate will be employed at the University of Liverpool under the supervision of Dr. Xin Tu.

Project description

The objective of the individual project is to investigate the energetic processing of PAHs and related species driven by non-thermal plasmas and to gain in-depth insight into the reaction mechanisms and pathways of the plasma processing through experiment and plasma simulation approaches. Plasma diagnostics will be used to understand the formation of a range of reactive species and their roles in the decomposition of PAHs.

Group description The group is equipped with state-of-the-art plasma diagnostic (e.g. Langmuir probes, time-resolved optical imaging and optical emission spectroscopy, and time resolved mass spectroscopy) and analytic facilities (e.g., GC, FTIR, and GC-MS) for plasma diagnostics and monitoring of gas/liquid products of plasma processes. The team is well equipped to deal with the multidisciplinary nature of plasma science and engineering.

<https://www.liverpool.ac.uk/electrical-engineering-and-electronics/staff/xin-tu/>

Institute description The University of Liverpool (<http://www.liv.ac.uk>) is a member of the prestigious Russell Group, comprising the leading research universities in the UK. The research quality of the Department of Electrical Engineering and Electronics in RAF (2014) has been judged as 90 % world leading or international excellent. The Technological Plasma Group at the University of Liverpool is one of the leading plasma groups in the world, working on low temperature plasmas and their applications in pollution control, energy conversion, bio-engineering, sterilization/decontamination, surface modification and material processing.

Ideal candidate The candidate should have an Undergraduate or Master degree in Physics, Chemistry, Chemical Engineering, or a related subject. Good written and oral communication skills are essential. Candidates must possess a willingness to foster strong scientific interactions with other members of the EUROPAH team including industrial partners. Experience in plasma chemistry, plasma processing, hydrocarbon chemistry or catalysis is desirable.

Working conditions and benefits The candidate will be employed at the University of Liverpool. This post is available for 12 months, from 1st October 2019 or soon afterwards. The monthly gross salary will be in accordance with the EC Marie Skłodowska-Curie rates and will be paid by the University of Liverpool. Salary may be subjected to tax according to applicable national regulations. Note that you are allowed to register to our PhD Programme if you can satisfy the entry requirements of PhD study at UoL. However, there is no guarantee of the funding to cover the tuition fee and stipend in your 2nd and 3rd year of PhD study.

If you have any questions about the application, please contact Dr. Xin Tu, xin.tu@liverpool.ac.uk