Two-year Postdoctoral Research Position in Liquid Fuel Synthesis and Characterisation

Salary of €35,489 – €41,181 per annum (up to 24 months).
The exact point on the scale will be determined by the experience of the candidate.

The position is available in the School of Physics, within the Faculty of Engineering, Mathematics and Science at Trinity College Dublin, Ireland, and is supported by Science Foundation Ireland, in the research team of Prof. Stephen Dooley. The project focuses on the chemistry and physics controlling energy generation when transportation fuels are reacted in internal combustion engines.

The interaction of complicated chemistry and physics limits the cleanliness and efficiency of both conventional compression ignition ("Diesel") and spark ignition ("Gasoline") reciprocating internal combustion engines.

The project intends to alter the chemical structure of conventional liquid transportation fuels (e.g. n-heptane) in order to tailor the combustion properties of the fuel to those desired for particular engine configurations. A researcher with principal skills and experience in synthetic chemistry or chemical engineering is required. S/he is expected to; lead the execution of the project and its reporting in international peer reviewed journals in the chemistry/chemical engineering area, to publicise their progress at international scientific conferences, and to engage with external collaborators. A formal background in the physical sciences, holding a Ph.D. degree in a chemical discipline such as Organic Chemistry, Catalysis, Chemical Engineering or a related subject matter would be most appropriate.

Experience of chemical synthesis and purification protocols is helpful, particularly chromatography – HPLC and/or bench-top column chromatography. Knowledge of scaling chemical reactions toward chemical engineering setups would be helpful, as would knowledge of sophisticated spectroscopic techniques such as liquid phase H$^1$ and C$^{13}$ Nuclear Magnetic Resonance (NMR) spectroscopy and/or mass spectrometry. Catalytic protocols will be considered for the synthesis and so experience in this area is desirable but not essential. Applicants interested in applying their chemical knowledge to real world engineering configurations in the power generation area are especially encouraged. Documented skills in computational physics/chemistry or of the reaction kinetics of fluids is also helpful. The successful applicant will join a dynamic inter-disciplinary team of experimental and computational scientists and engineers, and will therefore have the opportunity to develop new skills and experiences.

Prospective candidates should send a detailed CV, a covering letter outlining their educational background and research track-record, and the names and contact details of two referees to Prof. Stephen Dooley (stephen.dooley@tcd.ie). Please quote the entire job title in the subject line of your email. The 24-month position is available immediately. Applications will be evaluated as received and candidates of all levels of experience possessing appropriate skillsets will be considered.

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/. The School welcomes applications from all qualified applicants, and applications are particularly encouraged from traditionally under-represented groups in Physics.