Imperial College London
Department of Mechanical Engineering

PhD Studentship in Thermofluids/Fuel Spray Impingement in IC Engines

Applications are invited for a research studentship in the field of Thermofluids with focus on fuel spray impingement in Internal Combustion (IC) engines leading to the award of a PhD degree. The post is supported by a bursary and fees (at the UK/EU student rate) provided by an EPSRC CASE award with Jaguar Land Rover. Candidates should fulfil the eligibility criteria for the award. Please check your suitability at the following web site:

http://www.epsrc.ac.uk/skills/students/help/Pages/eligibility.aspx

Please do not make enquiries or apply formally unless you fit the eligibility criteria.

Project Description

This project will investigate the fundamentals of fuel spray impingement onto the piston and liner of modern Direct-Injection Spark-Ignition (DISI) engines using optical diagnostics. Key areas of study will include full-bore fuel spray and spray impingement imaging in an optical DISI engine and correlation of impingement with gaseous and particulate exhaust emissions from an equivalent thermal engine. Spray formation and impingement tests will also be conducted in a constant volume fuel injection chamber at controlled thermodynamic conditions. The combination of these research methods will give a full picture of in-cylinder effects related to various engine operation strategies, including variable valve timing and lift, boosting, as well as advanced split injection strategies with various fuels. Furthermore, wall surface treatments will be applied to reduce the effects of fuel impingement. The project is in close collaboration with Jaguar Land Rover (JLR) and will be based in the JLR Centre of Excellence (CoE) for Spark-Ignition Engine Research established in the Thermofluids Division of the Department of Mechanical Engineering at Imperial College London. The Thermofluids Division has an internationally leading record, established over several decades, in pure and applied research into multiphase flows and heat and mass transfer. Collaboration has also been planned with University College London on the development of novel surface texturing to reduce the effects of fuel wall impingement.

You will be an enthusiastic and self-motivated person who meets the academic requirements for enrolment for the PhD degree at Imperial College London. Ideally you will have a 1st class honours degree in mechanical engineering or a related subject, and an enquiring and rigorous approach to research together with a strong intellect and disciplined work habits. A keen interest in experimentation and engine systems is essential. Good team-working, flexibility, observational, practical and communication skills are all essential for this post.

To find out more about research at Imperial College London in this area, go to:
http://www3.imperial.ac.uk/mechanicalengineering

For information on how to apply, go to:
http://www.imperial.ac.uk/mechanical-engineering/study/phd/how-to-apply/

For further details of the post contact Prof Pavlos Aleiferis p.aleiferis@imperial.ac.uk +44 (0)20 7594 7032. Interested applicants should send first an up-to-date curriculum vitae to Prof Aleiferis. Suitable candidates will then be asked to complete an electronic application form at Imperial College London in order for their qualifications to be addressed by College Registry. The starting date for this PhD project is expected to be in November 2017.

Imperial Managers lead by example.

Committed to equality and valuing diversity. We are also an Athena SWAN Silver Award winner, a Stonewall Diversity Champion, a Two Ticks Employer, and are working in partnership with GIRES to promote respect for trans people