

Imperial College London
Department of Mechanical Engineering
PhD Studentship in Thermofluids

***Computational Fluid Dynamics of Mixture Formation and Combustion
in Engines***

Applications are invited for a research studentship in the field of Thermofluids with focus on fundamental understanding of in-cylinder mixture formation and combustion for high-efficiency gasoline engines using Computational Fluid Dynamics (CFD) 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 Jaguar Land Rover (JLR). Candidates should be UK/EU nationals; please do not make enquiries or apply formally unless you fit this eligibility criterion.

Project Description

This project will investigate by advanced CFD simulations the fundamentals of air flows, fuel injection and combustion in engines with focus on developing new high-efficiency and low emission combustion systems that will be able to operate across a range of mixture formation and combustion strategies and over a range of engine compression ratios, utilizing advanced valvetrain and boosting systems. The work may also include detailed analysis of in-nozzle multiphase flow injector phenomena and their coupling with spray formation for optimised in-cylinder mixing with the incoming airflow and exhaust gas recirculation. The simulations will be validated against experimental data that will be obtained by other PhD programmes that will be running in parallel in the lab. 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.

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 advanced numerical simulation methods for multiphase flows by commercial and open-source CFD codes 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 by September 2018.