



Postdoc – Open position

Experimental study of the HCCI and GCI combustion by ozone seeding

Project description:

HCCI and Gasoline Compression Engine is the most promised engine to increase the efficiency and decrease drastically the pollutant emissions. Using Gasoline-like fuels allows to control well the air-fuel mixture, however auto ignition of this fuels is particularly difficult at low temperature like during low load or warm up operating points. Since more than 10 years, we demonstrated that low ozone concentration could decrease dramatically the auto ignition delay especially at low temperature (600-800K) and for many liquid and gaseous fuels. Recently, we proved that, using Barrier Dielectric Discharge, enough ozone could be added at the intake of an engine.

The objective of the study is to increase the knowledge of the impact of Ozone on the oxidation of the fuels using a Rapid Compression Machine and an Optical Access Engine. In particular auto ignition delay will be determined and ozone decomposition and interaction with the fuel will be studied using optical diagnostics. Chemical mechanism will be used and update.

Qualifications:

The candidate must have a PhD in mechanical engineering, chemical engineering, chemistry, or related discipline. Considerable knowledge of combustion fundamentals is required, as is demonstrated expertise using experimental devices to measure fundamental properties such as ignition delay, flame speed, fuel decomposition/oxidation intermediates and products, etc. Knowledge of internal combustion engines and LTC would be beneficial for this position. Good oral and written communication skills are required. The position requires good collaborative skills, including the ability to work well with other laboratories (ICARE and IFPEN in FRANCE and SANDIA National Lab in USA).

Appointment period:

The initial appointment period is one year, with renewal possible up to three years total, subject to continued project funding and satisfactory performance. Gross salary evolves between 2200€ and 3400€ per month, depending on candidate experience.

Application:

Candidates will be required to provide: a detailed academic CV; list of publications, abstracts and significant presentations; two letters of recommendation. Direct all the inquiries to Pr. Fabrice FOUCHER (Fabrice.foucher@univ-orleans.fr).

Laboratory:

The research will be performed into the Energy, Combustion and Engine group of the PRISME laboratory. This group is composed of more than 35 researchers and students and is working on the chemical and physical understanding of the combustion process for the Internal Combustion Engine area on real engines, research engine with or without optical access and on high pressure and high temperature vessels (laminar and turbulent vessel, sprays, auto ignition delays...)