



Postdoc – Open position

## Experimental study of the Spark-Assisted Compression Ignition in an optical Access Engine

### Project description:

Compression Ignition engine is currently the most efficiency engine. However, the pollutant emissions in term of NO<sub>x</sub> and soot are a real problem in particular when Diesel fuel is used. Using Gasoline instead of Diesel is a promoting way to improve simultaneously the efficiency and the pollutant emissions. If GCI (Gasoline Compression Ignition) engine is working well at medium to high load, the low load combustion are not stable due to the low reactivity of the fuel, especially when RON95 (European Grade Fuel) is used.

Spark Assisted GCI engine is one of the solution which can allow to reach low load. In this context, the actual postdoc subject is focused on the improvement of the knowledge of the physical and chemical phenomena of the SA-GCI concept, in particular:

- The determination of the local equivalence ratio near the spark plug with LIF
- The characterization of the local aerodynamic using low/high speed PIV
- The characterization of the flame propagation using high speed OH, CH<sub>2</sub>O... Chemiluminescence
- The optimization of the ignition position (by using a Laser Ignition system).

In a light duty GCI optical access engine and in collaboration with the French automotive manufacture PSA Group.

### 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 the partner PSA Group.

### 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 2400€ 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](mailto: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...)