



## **CAPRYSSES**

## 1. Noteworthy productions

### 1.1. Outstanding progress regarding research

The focus of the research is to investigate - and improve - the quality, performance and safety of energy and propulsion systems. The underpinning theme uniting the individual projects is the study of chemical kinetics and fluid dynamics of the chemical conversion of energy. The advent of clean and safe energy and propulsion systems is highly important and the project covers the 3 main research and development areas. This is also highly relevant and important with the emergence of new fuels – either as pure fuels or fuel blends, increasingly from renewable energy sources. The study of pollution emissions from combustion engines remains a forefront challenging problem of the highest importance. This is addressed by bringing together the competences of the University of Orléans (PRISME) and the CNRS (ICARE). The first call of proposals was initiated in March 2013 followed by 3 subsequent calls. Thus up to now only a limited amount of results and only 4 peer-reviewed papers are available but the output is expected to increase very soon.

### 1.2 Striking progress in other “Labex” fields

#### a. Formation

The project has a most attractive graduate education and training program , consisting of a Masters course in Energy and Materials including regular Master colloquia, as well as a Summer School on Combustion.

#### b. Valorization

Valorization is performed through close cooperation with industry in particular with PSA and EADS, with little focus on patents, up to now.

#### c. International (outreach, attraction, networking...)

Outreach is performed through several instruments, e.g., by organizing international meetings and public seminars with Labex support, and through cooperation in international networks like the IEA implementing agreement on combustion

## 2. Added-value resulting from labelling and funding as a “Laboratoire d’Excellence”

The Labex was able to serve as a one-door entrance to the competences of both institutes which was considered particularly for cooperation with industry

## 3. Main weaknesses

### 3.1. Main weaknesses that might require corrective actions regarding the research performed in the “Labex”

The Labex has undergone a review through its scientific council and the panel found it very helpful to have access to this document. The report confirms the high level of the research carried out but also identifies some weaknesses. In particular, the uneven distribution of the project over the three topics was mentioned and a very wide and in part unfocussed composition of the research projects was noted. The panel acknowledges that the Labex has initiated counteractions in order to ensure that the future calls are more focused.

### 3.2 Main weaknesses that might require corrective actions regarding other fields of the “Labex”

#### a. Formation

No weaknesses were identified.

#### b. Valorization

The panel supports the strategy that, based on the achieved projects results, new cooperation in industrial projects should be explored. In addition, it recommends advice/training be provided to the researchers on IP creation, before publishing results.

#### c. International (outreach, attraction, networking...)

The panel supports the plan to better interact with other Labex projects.

#### 4. “Labex” contribution to structuring the gathered scientific strengths (governance, synergy, common scientific programming, visibility...)

The Labex has served as a catalyst to bring together scientists from two different scientific fields that have very different languages. The panel is aware that this is a long-term process where obviously some progress has already been made. However, a continuous effort in this direction is required, in order to build a team capable to acquire the necessary funding after the Labex finishes.

#### 5. Beyond scientific results specifically obtained by the “Labex”, give an assessment on its contribution to the development, outreach and overall visibility of the concerned institutions and of the corresponding site.

This Labex has been able to leverage significant additional funding from European, national and regional sources as well as from industry, of the order of the Labex funding itself. It achieved a high visibility to foreign scholars.

#### 6. Overall opinion and recommendations

The panel acknowledges that after some delayed start, attributed to administrative limitations, this Labex is on very good track to bring together two scientific disciplines that have had little contact in the past, to develop important research in the fields of quality, performance and safety of energy and propulsion systems. A steadily growing scientific output is expected over the next years. With the assistance of their own scientific committee the Labex was able to focus its research in areas where cooperation may have the strongest impact. The team has created a high international visibility and is present in important international networks. They were able to leverage significant additional funding. The development of strategies that may enable the continuation of the present consortium after the Labex is finished should be a priority for the second period of activity.