Postdoctoral Fellow in Experimental Thermoacoustics

Design of a Double-Acting Acoustic Driver for Compact Thermoacoustic Refrigerators

About the Project

Reducing greenhouse gas emissions is one of the major scientific and technological challenges of our time. In line with the European Union's objective of achieving climate neutrality by 2050, the development of environmentally friendly cooling technologies has become essential. Conventional refrigeration and heat pump systems rely on refrigerants with significant environmental impact, motivating the search for sustainable alternatives.

Thermoacoustic refrigeration is an emerging green technology that converts acoustic energy into cooling power without the use of harmful refrigerants. The ANR-funded project **ImClean** aims to improve the specific cooling capacity and compactness of thermoacoustic refrigerators through a better understanding of acoustic energy losses and the development of innovative acoustic drivers.

More information about the project is available on the ImClean website (https://anr-imclean.prd.fr/).

About the Position

We are seeking a highly motivated postdoctoral researcher to join the Pprime Institute at the University of Poitiers and contribute to the development of next-generation thermoacoustic refrigeration systems.

The main objective of the position is the design, development, and experimental characterization of a compact and symmetrical double-acting acoustic source dedicated to thermoacoustic applications. This work is part of Work Package 3 (**WP3**) of the ImClean project and focuses on improving compactness and performance of acoustic drivers.

The successful candidate will:

- Explore novel concepts and technologies for future compact acoustic sources;
- Design, build, and optimize innovative double-acting electroacoustic drivers;
- Characterize the developed acoustic driver experimentally;
- Design a thermoacoustic refrigerator prototype with a double thermoacoustic cavity.

The project involves close collaboration with researchers from the **Pprime Institute** and **LAUM** (Laboratoire d'Acoustique de l'Université du Mans).

Candidate Profile

Applicants should hold a Ph.D. in Engineering, Physics, Acoustics, or a closely related field.

The ideal candidate should have:

- Strong background in thermoacoustics and good knowledge in electroacoustics;
- Strong interest in experimental research and instrumentation;
- Experience in physical data analysis and signal processing;
- Good programming skills;
- Ability to work independently and collaboratively in an international research environment;
- Excellent communication skills in English.

Research Environment

The research will be carried out at the **Pprime Institute**, University of Poitiers, France, within a dynamic team working on thermoacoustics. The position offers access to advanced experimental facilities and opportunities for scientific collaborations, conference participation, and publication in leading journals.

Application:

Applicants are asked to provide the following documents:

- A detailed CV;
- A motivation letter.

These documents should be sent to Dr. Islam Ramadan (islam.ramadan@univ-poitiers.fr).

Application deadline: 18 October 2026	**Start date:** January 2027