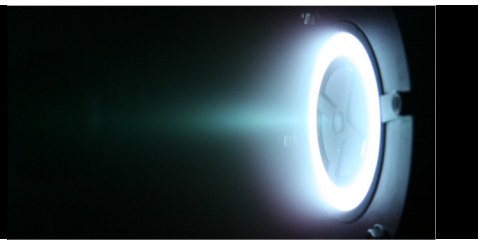
Research engineer in plasma physics for space propulsion



Context

Being a part of the national program « Investments for the future », SATTs (Sociétés d'Accélération du Transfert de Technologies - Technology Transfer Societies) aim at fostering the technological and economical maturity of the most promising research projects, at ending the fragmentation of the technology transfer administrations, at increasing the efficiency of technology transfer and at creating value. Those societies, implemented at a local level, enable to professionalize technology transfer from academic research and to strengthen universities' administrations.

In 2016, SATT Paris-Saclay (http://www.satt-paris-saclay.fr/) confirmed its support to the project "µ-PPI" which has been proposed in 2015 by the Observatory of Versailles - Saint-Quentin-en-Yvelines (OVSQ), the GEMaC laboratory of University of Versailles – Saint-Quentin-en-Yvelines (UVSQ), Synchrotron SOLEIL and the Ecole polytechnique. This project is about designing, assembling and characterizing a prototype of an integrated thrusting subsystem adapted to small satellites. This prototype is based on a miniaturized Hall Effect Thruster (HET) developed by the GEMaC. This project started in June 2016 and will end in June 2018. It will then continue within Exotrail (http://exotrail.com), a start-up created in August 2017 to commercialize the thrusting unit. The market needs an integrated, efficient and cheap propulsion solution for small satellites, and Exotrail is meeting this need.

Activities

We are looking for a research engineer in plasma physics, as a key member of our innovative & ambitious project.

You will handle the characterization and performance tests of our miniaturized Hall effect thruster, and, in a spirit of continuous improvement of our technology, you will lead the next plasma chamber developments.

Main characterization and performance tests activities:

- Designing test procedures, data and plots to acquire in close collaboration with the system engineers;
- Leading the vacuum tests and reporting activities;

Main plasma chamber development activities:

- Proposing improvements of our plasma chamber in collaboration with other skills;
- Improving the link between the cathode and the plasma chamber;
- Prototyping and evaluating promising solutions.

You will directly report to the Project Manager in charge of the maturation program. You will work closely with the technical team, particularly the system engineering team, to ensure the adequacy between theory, practical realisation and industrial production – which is at the core of Exotrail's approach.

Desired candidate

You are an experimental physicist with a plasma background, ideally along with an experience in space related projects. You must have validated the following requirements in previous experiences:

- Various vacuum testing campaigns;
- Plasma simulations;
- Detailed reporting;
- Stringent in file processing;
- Autonomy to work on your own, in cooperation with a project leader and a system engineer;
- High workload in constrained timeframe and budget;
- English proficiency.

More specifically, you should master:

- Execution of vacuum testing;
- Design and assembly of electric propulsion (EP) test benches;
- Design and assembly of a performance test bench for EP;
- Discharge plasma physics;
- Hall effect thruster physics and simulation;
- Self-heating hollow cathodes physics and simulation;
- Cathode-plasma chamber interactions.

On top of that, you will have strong reporting and organizational capabilities, and a desire to work with a very dynamic and ambitious team.

Conditions

You will work at the Observatory of Versailles – Saint-Quentin-en-Yvelines, located at Guyancourt. You might have to travel a bit to meet partners and subcontractors.

The job is on a temporary contract ending in June 2018 with the SATT Paris-Saclay and should conduct to a permanent contract with the startup Exotrail after June 2018 to continue the development. Exotrail is located at the Ecole polytechnique at Palaiseau (91).

The remuneration will be linked with previous experience.

CV and cover letter must be send, electronically, to the Project Manager, Jean-Luc Maria (jean-luc.maria@uvsq.fr) and to Project Supervisor, Mikael Contrastin (mickael.contrastin@satt-paris-saclay.fr).