



## Internship Project Proposal for Erasmus Master students

### ***Plasma and water droplets: investigation of plasma and water interaction***

**Institution:** CNRS (Centre National de la Recherche Scientifique)

**Laboratory:** GREMI

**Address:** 14 rue d'Issoudun, 45067, Orléans, France

**Internship period:** minimum 3 months in 2024

#### **Subject:**

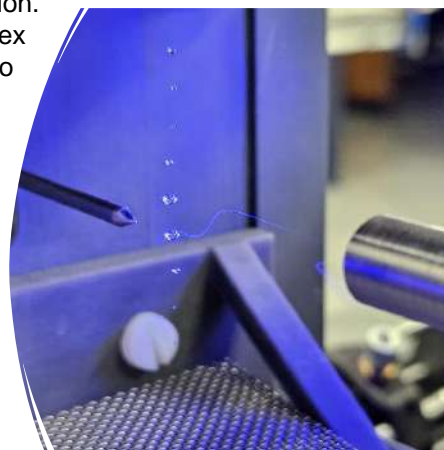
Nowadays it becomes more and more essential to use water efficiently knowing the scarcity of water, to reduce pollution and to reduce chemicals consumption, for this we need to work on innovative technologies. We are now able to create from simple water, by combining aerosol and cold atmospheric plasma (CAP) technologies, a new tool to treat wounds and seeds in an efficient way, with a reasonable cost and with a limited impact on the planet.

Since few years, CAP and liquids are studied with a lot of interest by researchers from all around the world because of their multiples applications on various fields like medicine and agriculture. Yet there is a lot remaining to learn about it, especially about sprays and plasma interaction.

The aim of this internship is to understand the complex mechanisms between plasma and water droplet interaction in order to improve the efficiency of the numerous application of plasma aerosols.

First, you will have to optimize the experimental setup composed of an acoustic levitator, a piezo-electric injector and electrodes to create the plasma. After this, you will have to implement a set of diagnostics (i.e. electrical measurements, Spectroscopy, PIV, Rainbow diffraction...). The last step will be the treatments and the analysis of the obtained data to understand the phenomenon behind plasma and water interaction.

We are searching for very motivated students who want to be part of groundbreaking research in the field of plasma.



#### *Selected references for curious minds:*

- A. Stancampiano et al., Appl. Sci., vol. 9, no. 3861, 2019

- P. Maguire et al., Nano Lett., vol. 17, no. 3, pp. 1336–1343, 2017

#### **Requirements:**

- Good command of English (level B2 or higher)
- Enrollment in a university master's course (equivalent to French level M2)
- Background in technical-scientific studies
- Predisposition for experimental research studies
- Background/experience in plasma and/or aerosol physics is a plus
- Programming skills (ie. Matlab and Python)

**Internship supervisors:** Dr. Augusto Stancampiano, Dr. Eric Robert and Dr. Pablo Escot-Bocanegra

**To apply:** Send CV (1 page max) and motivational letter by email

#### **Contact:**

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