Post-doctoral position in soft matter /plant physics https://bit.ly/3EAyLnb

Bubble embolism spreading in biomimetic leaves

Institut de Physique de Nice (INΦNI) : Team MIMIC (Xavier Noblin, Céline Cohen)

Context:

Plant physics has become a dynamic field since the last 15 years as many collaborations between plant biologist and physicists have developed. The aim of this project is to focus on the mechanisms of sap ascent in plants which relies on the use of negative pressures. This key phenomenon in the physiology of plants is a question of prime importance due to the strong constraints and trade-off it must deal with. It put the plant vascular networks at high risks of air embolism (gas bubbles nucleating due to the liquid metastability that block the water movement through the xylem) leading to its death. The spreading of air-embolism in the hydraulic network of leaves is then a key point of drought resistance.

In the context of the **PhySap** ANR project, several new approaches are developed to observe and evaluate the formation and propagation of air embolism. The project is between Institut de Physique de Nice (INPHYNI), Laboratoire Interdisciplinnaire de Physique (Liphy, Grenoble) and Laboratoire de Physique et Physiologie Intégratives de l'Arbre en environnement Fluctuant (PIAF, Clermont-Ferrand). **It consists in studying both real and synthetic xylem networks.**

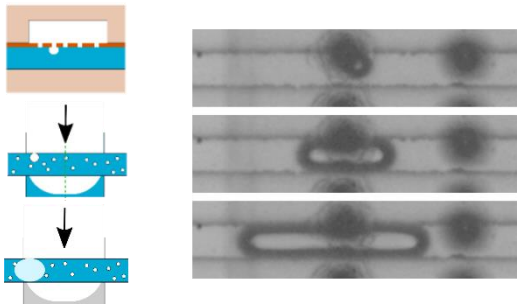
Summary :

The present position concerns mainly the synthetic case and it will be done in strong collaboration with the two other partners and in constant dialogue with the real aspects.

The goals of the project are to:

1) Build model biomimetic devices using classical microfluidic techniques (glass, plastics, PDMS) to study embolism spreading at pits scale and look at wall deformations effects.

2) Use more advanced microfabricated devices functioning at negative pressures to reproduce and understand as well as possible living plants.



The successful applicant will:

Participate to the microfluidic device development, develop the experimental setup, perform experiments, analyze results, supervise students, collaborate with the staff of the ANR PHYSAP project, realize oral and written reports.

Qualifications:

Applicants should be highly motivated with a strong interest and experience in soft matter and microfluidics. Experience with microfabrication, high speed imaging, image analysis is a plus. Ability to work independently in the context of a dynamic, interactive interdisciplinary groups is essential.

Salary & Benefits:

Around 2140 € Net, but depends on experience (more for more years after Ph.D). Duration: 1 year.

Details of how applicants should apply:

Submit applications through the website:
https://bit.ly/3EAyLnb or search in : https://emploi.cnrs.fr/ .
For any information please contact: Celine.Cohen@unice.fr , Xavier.Noblin@unice.fr .

Website opening date to apply: 24/12/2021**. Second closing date:** 04/02/2022.