

Join our Team: PhD position in Interfacial Rheology at UNED (Madrid)

The Laboratory of Complex Systems at UNED (Madrid, Spain) offers a fully funded PhD position for the project

Computational and experimental methods for interfacial flows. Mechanical properties of interfacial systems: novel experimental techniques.

Project description and objectives: *Soft materials* are systems that exhibit a very large dynamical response to very small stresses (such as liquids) yet display structural order at length scales much larger than the molecular scale (such as solids). These types of materials include, for example, polymers, gels, liquid crystals, foams, emulsions, biomembranes, and biological fluids. It is common for Soft Materials to be composed of more than one phase (e.g., two liquids in the case of an emulsion, or a liquid and a gas in a foam), such that the properties of the **interface** that separates both phases have a great impact on the overall behavior of the system. Thus, despite being as thin as a single molecule, fluid/fluid interfaces can exhibit complex mechanical properties like those of a viscoelastic material. The main objective of this work is to develop experimental and computational methods for measuring the response of fluid/fluid interfaces to external deformations and stresses, and to apply them for the characterization of systems of industrial and biological interest (such as lung surfactants, fatty acids, and polymeric materials).

Background of the candidate: We are looking for a motivated student with a Masters degree in Applied Physics, Materials Science, Mechanical Engineering, Chemical Engineering, or a similar field. The position predominantly entails **experimental** work, but knowledge of graduate-level Fluid Physics is considered fundamental. The development of scientific instruments is a major focus of this Thesis, so the candidate must have experience (or show a keen interest) in aspects such as the design and assembly of mechanical components and the programming of control software. Previous knowledge of programming in LabVIEW, MATLAB or Python will be valued, although specific training will be provided. The candidate must also be able to work collaboratively with multidisciplinary groups and in an international environment. Knowledge of Spanish is not required.

When: The tentative start date is January 2025. The contract has a maximum duration of 4 years.

Where: The Laboratory of Complex Systems at UNED is located in the municipality of Las Rozas de Madrid in Madrid, Spain.

Supervisors: Professors Miguel Ángel Rubio Álvarez, Javier Tajuelo and Mariana Rodríguez-Hakim will supervise the doctoral work.

Application process: Interested candidates should contact Javier Tajuelo (jtajuelo@ccia.uned.es) and Mariana Rodríguez-Hakim (mrodriguez@fisfun.uned.es) via email.

Further information: For more information about the Laboratory of Complex Systems and our research activities, please consult the group's **website**. For more information on the PhD position, contact Javier Tajuelo (jtajuelo@ccia.uned.es) or Mariana Rodríguez-Hakim (mrodriguez@fisfun.uned.es).