

Offer Description

Biopharmaceuticals, among which are proteins and peptides, are very fast developing area of pharmaceuticals. Currently their manufacturing is a multistep process dominated by chromatographic purifications, which is related to high equipment and materials costs and wasting a lot of amounts of solvents. The MSCA DN "Crystallization towards efficient and sustainable biomanufacturing" (PROCRYSTAL) vision is to establish crystallization as a simple, sustainable, cost-efficient and scalable process as alternative to current downstream processing techniques .

We invite ambitious early-career scientists to apply for a MSCA DN fellowship and the successful applicant will work on the topic **"Crystallisation of peptides in solution, applying designed seeds or templates and varying solvents and additives"**.

The offered PhD project aims to contribute to a better understanding of the crystallisation of peptides and enable the development of strategies for crystallisation control on more representatives. The main task is related to finding appropriate conditions (substances, surfaces, particles etc.), that can enhance the nucleation of crystal phase in peptides' solutions. For this reason, along with well-known nanoparticles, newly designed nano-complexes will be applied. Solution behaviour in water and organic solvents will be followed. Several approaches will be applied related to variation of factors affecting critical nuclei formations: pH, type of buffer, temperature, concentrations. Results obtained will be discussed in the frame of classical nucleation theory considering also the two step mechanism of nucleation.

This PhD project is embedded in the Marie Skłodowska-Curie DN program "PROCRYSTAL", an initial training network for PhD students which is dedicated to biomolecule crystallization, biochemistry, chemical and process engineering as well as advanced modelling. The PROCRYSTAL training program for the involved PhDs has been framed with special attention to fundamental understanding of the underlying phenomena, from the molecular scale to process scale, and advanced experimental and modelling techniques specific to crystallization technology. The PhDs will also perform secondments at our academic and industrial partners.

Academic Qualifications and Skills Required:

- Strong motivation to tackle challenging research problems.
- M.Sc. or equivalent in Chemistry, Chemical Engineering (or related) with strong overall marks
- Knowledge of crystallization will be regarded as a plus
- Enthusiasm for interdisciplinary research.
- Proficiency in written and spoken English is mandatory.

The successful candidate will be offered a PhD position to become part of our international team with global research links.

Importantly, applicants must also meet the requirements of the Marie Skłodowska-Curie Conditions of Mobility of Researchers. Researchers can be of any nationality and are required to undertake transnational mobility. This means that researchers must not have resided in the country of their host beneficiary (Bulgaria) for more than 12 months in the past 3 years.

For any further question please contact: d_tsekova@uctm.edu

How to apply: Send your CV and motivation letter to Prof. Dr Daniela Tsekova by e-mail:
d_tsekova@uctm.edu

You can apply for this job no later than 31/03/2025