Hosting offer for Marie Sklodowska-Curie Postdoctoral Fellowships (PF) 2022 at University of Cyprus / Research group "Physical Chemistry of Colloids and Interfaces"

MSCA Postdoctoral Fellowships are individual research grants offering excellent postdoctoral researchers the chance to develop their skills by means of international mobility. Through the implementation of an original and personalised research project, MSCA Postdoctoral Fellowships aim to foster excellence through training and mobility and to equip researchers with new skills and competences in order to identify solutions to current and future challenges.

University of Cyprus /research group Physical Chemistry of Colloids and Interfaces (PCCI) invites motivated postdoctoral researchers to jointly prepare an application for the MSCA-PF-2022 call Marie Skłodowska-Curie Postdoctoral Fellowships call (MSCA-PF-2022) with them as host organisation.

Description of Hosting organisation/group

The group is working in various aspects of Colloid and Interface Chemistry with emphasis on soft-matter and biophysics. The following topics are being actively pursued at the moment: (a) Specific ion effects on biological membrane mimics. In this project we work with Langmuir monolayers of lipids and with various types of micelles and vesicles, and assess the effects of various ion classes on these structures. There is ongoing work with the lyotropic series of anions, but we also work with hydrophobic ions (such as tetraphenylborate), and more recently with lanthanide salts. The last topic is of particular current interest, as we strive to establish selectivity of lipid structures for various lanthanide salts. (b) Examination of antioxidant action in various food emulsion architectures. Here we use multilayer emulsions of linseed oil to study the stabilization provided by natural antioxidants placed at various positions at the emulsion interfaces. (c) Inorganic nanoparticles and films as platforms for various biochemical applications. Right now we are using calcium carbonate particles and attach short oligopeptides to them, using the final structures as biochemical sensors. (d) Silicate materials as special sorbents for boron and uranium.

Major lab infrastructure: Langmuir-Blodgett instruments, with Brewster-angle microscope and reflectance IR for monolayers, quartz-crystal microbalance, combined ellipsometer and SPR instrument, interfacial titration calorimeter, precision rheometer, high pressure homogenizer for emulsions, fluorescence and UV-vis spectrophotometers.

https://www.ucy.ac.cy/dir/el/component/comprofiler/userprofile/psleon

Topics/expertise

The topics (a), (b) and (c) described before are available for interested perspective post-doctoral fellows. The research will be supervised primarily by the lab director, Prof. Epameinondas Leontidis. Depending on the project, additional members of the Chemistry Department as well as collaborators from the Department of Physics of UCY and international collaborators may participate in the research and guidance of the postdoctoral fellow.

Your profile

(a) Lanthanide salt effects on lipid monolayers and vesicles. The work will include X-ray diffraction at the water surface and Small-Angle X-ray scattering, probably performed in European synchrotron centres. Some collaboration is envisioned for SAXS with Dr Olivier Diat (Institute for Chemical Separations, Marcoule, France). Quantification of the interactions may involve the use of quartz-crystal nanobalance and SPR for the first time, and also a deeper use of calorimetry and interfacial rheometry.
(b) Covalent bonding of natural antioxidants (such as EGCG or anthocyanins) on emulsifiers (e.g. BSA) and/or wall components of multilayer emulsions (e.g., chitosan, pectin, chondroitin sulfate). Examination of the interfacial composition and its effect on antioxidant action against the oxidation of omega-3 – containing edible oils. Mild synthetic chemistry capabilities are required in this project.
(c) Design of silicate mesoporous materials that can act as sorbents for selective removal of boron from desalination water or for uranium recovery from seawater. Collaboration with the Inorganic synthesis group of Prof. Keramidas (Chem. Department, UCY), a synthetic chemist specializing in coordination chemistry.

- Expected qualifications/expertise of the candidate: Good knowledge of physical chemistry and its application to materials and/or interfaces.

- Required PhD degrees: PhD in Physical Chemistry, or Colloid and Interface Science, or Materials Chemistry or Biophysics, depending on the topic chosen

- You must have a completed PhD at the time of the call deadline (14 September 2022).

- Candidates must have a maximum of 8 years full-time research experience from the PhD award date until September 14, 2022. Periods of inactivity in research (e.g. unemployment, periods of employment outside research, parental or sick leave) do not count towards the time of research experience.
- For European fellowships, candidates can be of any nationality and must not have resided or carried out their main activity (work, studies, etc.) in Cyprus for more than 12 months in the 36 months immediately before September 14, 2022.

- Highly motivated candidate with an excellent research track record appropriate to career stage, as evidenced by academic publications and other scientific output.

What we offer

- Support and guidance for the preparation of your MSCA PF proposal
- A stimulating, interdisciplinary environment for high-level research.

How to apply?

Indicate your interest by contacting the host institution as follows:

Please contact Prof Leondides by email psleon@ucy.ac.cy with a short CV and motivation to indicate your interest to prepare a MSCA-PF application with a supervisor /host group/…

After the supervisor agrees to support you as a MSCA-PF candidate, you can start preparation of MSCA PF project proposal and will be supported further by the Research Support Office of the host university.

For more information please contact the MSCA coordinator of the host institution at rss@ucy.ac.cy

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