

## Call for expression of interest

### Marie Skłodowska-Curie Postdoctoral Fellowship

(MSCA-PF-2022)

The University of Split hereby welcomes expressions of interest from excellent researchers who intend to apply for MSCA PF 2022. MSCA applicants will have the opportunity to work as a part of our research groups and they will receive mentoring from the UNIST supervisor and administrative support from the Science Office.

The University of Split, as an HRS4R award holder, supports excellence in research and innovation through the implementation of HR Strategy for Excellence in Research and endorsement of the Charter of Code for Researchers and ALLEA. The University has a long record of experience in implementation and supporting the implementation of projects co-financed from the European Social Fund and the European Regional Development Fund, as well as European Union programs: Horizon 2020, Erasmus+ (Key Activities 2 and 3), Interreg, EuropeAid, etc. At the moment, there we have 120 ongoing projects, either funded from national sources, such as the Croatian Science Foundation and the Ministry of Science and Education, or EU programs and funds. For several years now, the University of Split is continuously taking part in academic ranking, and it accomplishes high results both on a national and international level. As Times Higher Education Impact Ranking results for 2021 show, the University of Split, as the only Croatian university on the list, was ranked for 10 out of the total 17 United Nations Sustainable Development Goals. As a confirmation of the University's dedication to Open Science principles, in 2020, as a part of the U-multirank World University Ranking, it has been ranked as one of the Top 25 Performing Universities in Open Access Publications.

At the University of Split, there are more than 19,000 students, along with 800 foreign and exchange students, enrolled across 81 undergraduate, 87 graduate, 5 postgraduate vocational, and 21 doctoral programs. The degree programs are designed in a way to facilitate job market entry for our students and to encourage them to take part in life-long learning activities.

#### Supervisor's profile:

<b>Science field:</b>	Natural science
<b>Supervisor:</b>	Boris-Marko Kukovec, PhD, Assistant Professor
<b>Research keyword:</b>	carboxylate, coordination polymer, crystal structure, coordination chemistry, crystal engineering
<b>Supervisor's CV</b>	<a href="#">Boris-Marko Kukovec, PhD, Assistant Professor</a>
<b>ORCID number:</b>	<a href="https://orcid.org/0000-0002-9582-404X">https://orcid.org/0000-0002-9582-404X</a>
<b>Research ID:</b>	B-5865-2019
<b>Google Scholar ID:</b>	<a href="https://scholar.google.com/citations?user=460aG-UAAAAJ&amp;hl=hr&amp;oi=ao">https://scholar.google.com/citations?user=460aG-UAAAAJ&amp;hl=hr&amp;oi=ao</a>

**Personal web-page link:**

[https://www.ktf.unist.hr/index.php/obavijesti-2/obavijesti-poslijediplomski-studij/172-djelatnici/cv/5105-kukovec\\_cv?showall=1](https://www.ktf.unist.hr/index.php/obavijesti-2/obavijesti-poslijediplomski-studij/172-djelatnici/cv/5105-kukovec_cv?showall=1)

**Physical Chemistry research unit– Chemistry Department  
(Faculty of Chemistry and Technology)**

[Faculty of Chemistry and Technology](#) has two main departments: Chemistry Department and Engineering and Technology Department. [Physical Chemistry research unit](#) is one of 8 research units organized under the Chemistry Department, and it is a part of the undergraduate and graduate study program of Chemical Technology.

**Supervisor’s research area includes:** Coordination polymers of 3d transition metals (Co, Ni, Mn, Fe) and lanthanoids with carboxylate and mixed ligands (including bridging ligands e.g. 4,4’-bipyridine, 1,2-bis(4-pyridyl)ethane) will be prepared in three different ways: hydrothermally, mechanochemically and in the solution. The obtained single crystals of coordination polymers will be used to determine their molecular and crystal structures by single-crystal X-ray crystallography. A crystal structure determination will provide information on the metal coordination environments, dimensionality and porosity of coordination polymers, and on the weak interactions present in the crystal packing (hydrogen bonds and p-p interactions).

The prepared compounds will be also characterized by various diffraction (powder X-ray diffraction (PXRD)), spectroscopic (infrared (IR) and ultraviolet/visible (UV/Vis)), thermal (thermogravimetric analysis (TGA), and differential scanning calorimetry (DSC)) and electrochemical (cyclic voltammetry) methods. Special attention will be given to the study of the magnetic and luminescent properties of the prepared compounds. The redox properties of the coordination polymers will be studied by cyclic voltammetry; the samples will be dispersed in the graphite paste and mounted on the working electrode. The possibility of transformation of the selected coordination polymer solvatomorphs into other solvatomorphic forms by exposing crystals to various liquid solvents and solvent vapors will be studied by PXRD and thermal methods. Furthermore, in the case of porous coordination polymers, their sorption/desorption properties will be studied. The solvent-accessible voids in the crystal structures of porous coordination polymers are usually filled with solvent molecules and the possibility of their exchange with other solvent molecules (liquid and/or vapor) and with gas molecules (hydrogen, nitrogen, carbon dioxide) will be determined.

PXRD diffractometer, IR spectrometer, TGA and DSC instruments, and cyclic voltammetry instrument are available within the premises of the Faculty of Chemistry and Technology, University of Split, while other measurements of interest will be performed under established scientific collaborations.

Selected participants will receive mentoring support from Dr. Boris-Marko Kukovec, Assistant Professor, while the Science Office will provide them with administrative support during the proposal writing and submission process.

Prospective candidates should be in possession of a PhD degree and must not reside in Croatia for more than 12 months in the last 3 years. We are kindly asking you to send your curriculum vitae, along with the *One-page proposal* (available [here](#)), directly to the supervisor of your choice, in this case, associate professor Boris Marko Kukovec (bmkukovec@ktf-split.hr) with adding [znanost@unist.hr](mailto:znanost@unist.hr) in the e-mail copy. As a subject, please indicate “MSCA\_PF\_2022\_mentoring\_candidate name and surname”.