



Institut "Jožef Stefan", Ljubljana, Slovenija

**Call for Expression of Interest
Marie Skłodowska-Curie Actions Individual Fellowship
(H2020-MSCA-IF-2017)**

Jožef Stefan Institute is keen to cooperate with enthusiastic post-doctoral researchers and is inviting them to submit a joint application according to the Marie Skłodowska-Curie Actions Individual Fellowship scheme.

What is Marie Skłodowska-Curie Actions Individual Fellowship (MSCA IF)?

MSCA IF gives the opportunity to the best or most promising researchers within and beyond Europe to come to Slovenia and work in an attractive environment with highly motivated and experienced scientists.

The grant will cover at least one year of your salary, travel and family cost as well as research costs in line with the MSCA IF funding rules. To come to our institute, you have the following opportunities:

- Standard European Fellowships: for those coming from any country in the world or moving within Europe.
- Reintegration panel: for researchers coming to Slovenia from outside Europe.
- Career Restart panel: for researchers not have been active in research for at least 12 months immediately prior to the deadline of submission.

Please note that according to the MSCA IF rules:

- deadline for submission is 14 September 2017,
- you may not have resided or carried out your main activity in Slovenia for more than 12 months in the 3 years immediately before the call deadline for Standard European Fellowships,
- you may not have resided or carried out your main activity in Slovenia for more than 3 years in the 5 years immediately before the call deadline for Career Restart panel,
- only one proposal per individual researcher will be evaluated.

More information on the call:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/msca-if-2017.html>

Scientific areas

Within the MSCA IF, JSI will provide the opportunity to researchers motivated to work in the following scientific areas:

PHYSICS

- Strongly correlated electron systems and quantum statistical physics, physics at nanoscale, soft matter and biophysics, flavour physics, theoretical physics for LHC, chromodynamics on the lattice.
- Experimental particle physics: ATLAS at LHC in CERN and Belle2 at SuperKEK-B in KEK (detector R&D/construction/upgrade, physics analysis).

CHEMISTRY, BIOCHEMISTRY, MATERIAL SCIENCES

- Development of thermosensible bioinks for 3D printing of scaffolds for tissue regeneration. Bioinks based on natural biopolymers (proteins and polysaccharides) are difficult to print but can be modified by addition of chemical crosslinkers or thermosensitive polysaccharides.
- Research enabling controlled synthesis of complex nanomaterials based on hybridization of nanoparticles with different functionalities (i.e., magnetic, optical, ferroelectric, catalytic) into multifunctional nanocomposites in colloidal suspensions.
- Synthesis and characterization of hybrid and inorganic functionalized materials.
- Ultrafast memory materials for quantum and classical computing.
- Theoretical studies in equilibrium and nonequilibrium mesoscopic and nanoscale systems.
- Ultrafast studies of electron dynamics in correlated systems.
- Optical and electronic properties of transition metal dichalcogenides and other two-dimensional semiconductors.
- Structure and rheology of complex magnetic fluids.
- Field-induced structures in ferromagnetic chiral nematic liquid crystal.
- Electrocaloric, multicaloric, multifunctional materials: complex perovskites, shaping and patterning of bulk, thick, thin films and printed structures, domain engineering, macroscopic and local measurements of functional properties, processing - microstructure - properties relationship.
- Novel biomedical applications based on pulsed photo-thermal radiometry (PPTR) and/or diffuse reflectance spectroscopy.
- Upconverting nanostructures for biomedical imaging and therapy.
- Neuroscience: Molecular and cellular basis of neurodegenerative disease. Changes in protein and RNA biology associated with neuronal dysfunction.

ENVIRONMENTAL SCIENCES

- Application of monolithic chromatography in HPLC-ICP-MS based speciation analysis.
- Application of aquaporines for tritium enrichment for analysis of low-level tritium in samples as well as for removal of tritium from NPP releases.
- Application of radionuclides as tracers of biogeochemical processes.

REACTOR ENGINEERING

- Nuclear engineering and safety: modelling of two-phase flows, simulation of conjugate flows with heat transfer, grain size simulations of flaws in polycrystalline aggregates.

ELECTRONICS, INFORMATION AND COMMUNICATION TECHNOLOGIES

- Artificial intelligence, text/data mining, big data analytics, sensor data analytics, smart mobility, internet of things.
- Learning object representations and mobile manipulation skills on a humanoid robot.
- Resource management in heterogeneous wireless networks.
- Radio localization, radio environment contextualization and radio propagation modelling and prediction in challenging propagation environments.
- Flexibility management and virtualization of network elements.
- Edge computing for software defined sensor network infrastructure.
- Data-driven design and performance optimization of wireless networks.
- Generic parallel implementation and optimization of numerical methods for solving transport problems ranging from semiconductor to coupled solid mechanics simulations.
- Bio-signal analysis: design of a cloud based platform and advanced algorithms for analysis and knowledge extraction from multimodal bio-signal measurements (measurements containing ECG and complementing bio-signals, such as body temperature and physical activity).
- Computational intelligence, deep neural networks, parallelization, (self)adaptation, intelligent user interfaces, and context-awareness applied to transportation, production or e-health.
- Hardware solutions for embedded systems and IoT: fault tolerant computing, dynamic hardware reconfiguration, hardware algorithm acceleration of compression and encryption.
- Information security: protocols, components, models and trusted services.

Jožef Stefan Institute as a host institution

Jožef Stefan Institute is the leading research institution for natural sciences in Slovenia. It is one of the top research institutions in Europe (37th place in 2014 European Research Ranking). The Institute's greatest asset is the interdisciplinary skills of its highly qualified personnel, covering a broad spectrum of basic and applied research. The Institute offers a wide spectrum of research areas and excellent laboratory facilities.

Jožef Stefan Institute is collaborating with organizations worldwide, pursuing its activity by engaging in research projects, development programmes and collaborative partnerships with industry. The Institute is actively involved with all the Slovenian as well as with many foreign universities. In 2016, the Institute was involved in over 900 projects, almost 400 projects were international.

Jožef Stefan Institute is actively participating in the Horizon 2020 programme. We are currently involved in over 100 H2020 projects, out of them JSI currently participates in 15 MSCA (Marie-Sklodowska-Curie Actions) projects and is well experienced in hosting and fully supporting foreign researchers.

More information on JSI:

<https://www.ijs.si/ijsw/V001/JSI>

Application process at JSI

Interested candidates are invited to send an e-mail including:

- a maximum 2-page summary of your research proposal,
- your CV,
- a cover letter

as soon as possible to the contact person Ms. Alma Mehle, Alma.Mehle@ijs.si