European University

Marie Skłodowska Curie Action – Postdoctoral Fellowship 2023
Expression of interest – Hosting offer
(MSCA-PF-2024)

Contact Person/Scientist in charge *(data of the principal investigator of the research group/lab or scientific supervisor)*	**Name**	Atakan
	Surname	Altınkaynak
	Email	altinkayna@itu.edu.tr
Laboratory /Department /Institute /Centre / *(data of the centre/department where the fellow would be located*	**Name**	Flexible Systems Laboratory
	Address	Istanbul Technical University Gumussuyu Campus 34437 No:65 Gumussuyu Beyoglu Istanbul TURKEY
Research Area *(Please select the research area: corresponding to the eight MSCA evaluation panels. You can select between one and up to three scientific areas per EOI)*		Social Sciences and Humanities (SOC) Economic Sciences (ECO) **Information Science and Engineering (ENG)** Environment and Geoscience (ENV) Life Sciences (LIF) Mathematics (MAT) Physics (PHY) Chemistry (CHE)
Brief description of the Centre/Research Group *(max. 1,600 characters including spaces: information about the research centre or research group, scientific staff. Please include URL if possible)*		Flexible Systems Laboratory was established in 2019 at Istanbul Technical University Mechanical Engineering Faculty in Gümüşsuyu Campus. The main focus of the lab is to develop solutions for smart, flexible, and soft robotic systems as well as polymeric materials for biomedical applications. We focus on design, development, characterization and application of embedded and wearable sensors in various fields particularly medical applications; fabrication of flexible, foldable and stretchable structures; manufacturing of tissue scaffolds and wound dressings; motion control of robotic systems; 3D printing, and modeling of flexible structures. **Field of Work:** Development of soft and flexible robotic systems; Foldable, origami-based mechanism design; Mechatronic system design and integration; Polymeric and textile-based wearable sensor design, development and characterization; Polymeric tissue scaffold and wound dressing design and development; 3D Printing technologies; Flexible (compliant) mechanism modeling; Machine learning applications; Control applications

Project description *(max. 1,800 characters including spaces: short description of the research project / research line where the fellow would be hosted and develop his /her project)*	Materials such as implants, orthoses and prostheses made of titanium (Ti) are widely used in the treatment of bone damage resulting from various diseases (such as cancer, infection) and accidents. Bone tissue is a self-repairing tissue, but when the damage exceeds the critical size, alternative treatment methods are needed, including the use of stem cells, innovative scaffolds and appropriate biological growth factors. In addition, providing a strong bond between bone and implant (osseointegration) by avoiding capsule formation is possible with bioactive surfaces that can control cell behavior at the implant/tissue interface. The release of bioactive agents from regular surface patterns may increase the osteogenic properties of the surfaces. The new researcher will be welcome to work in the development of scaffolds of different designs to mimic the behavior of cells and their natural environments using the 3D printing method, apply these scaffold designs on Ti surfaces and determine the design of the scaffolding architectures to be employed using the finite element method and optimization algorithms.
Applications: documents to be submitted and deadlines *(Please indicate the documents that the candidate fellow should submit to establish contact: CV, letter of motivation, letter of references, etc., please indicate deadline. Recommended deadline: April 2023)*	Interested research scholars are asked to send their CVs, letters of motivation, letters of references and their research plans to show how they can contribute to the project topic described above. Deadline: June 30th 2024.