EXPRESSION OF INTEREST- ULPGC SUPERVISOR

FOR HOSTING MARIE SKŁODOWSKA-CURIE INDIVIDUAL FELLOWSHIPS (CALL MSCA-IF 2020)

Supervisor/Scientist in charge	Mario Monzón
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Institution	Universidad de Las Palmas de Gran Canaria
Department/Institute/Centre	Mechanical Engineering department
Address	Edificio de fabricación Integrada, Parque tecnológico ULPGC
Research Area	☐ Chemistry (CHE) ☐ Economic Sciences (ECO) ☒ Information Science and Engineering (ENG) ☐ Environmental and Geosciences (ENV) ☐ Life Sciences (LIF) ☐ Mathematics (MAT) ☐ Physics (PHY) ☐ Social Sciences and Humanities (SOC)
URLs	www.ulpgc.es Web Research Institute / Group:
Applications: documents to be submitted and deadlines *(Indicar qué documentación deberán remitir los interesados/as para establecer contacto: CV, letter of motivation, letter of references, etc.)*	At the deadline for the submission of proposals **(09/09/2020),** researchers (*): - shall be in possession of a **doctoral degree** or have at least **four years of full-time equivalent** research experience. - **Comply with the mobility rule**: you cannot apply for a fellowship in our institution if you do not meet the call mobility rule -> might change depending on the type of MSCA-IF. - Proficiency/fluency in English language (including writing). If you are interested in submitting a proposal, please send us the next documents by e-mail **before July 15th 2020**: ☒ CV with the contact details of 2 referee ☒ Letter of motivation ☒ One-page research project ☐ Other:
Contact *(e-mails)*	Supervisor: mario.monzon@ulpgc.es European Projects Office: ope@fpct.ulpgc.es

(*) Further details on the Call and additional eligibility criteria can be found at the Participants´ Portal

BRIEF DESCRIPTION OF THE CENTRE / RESEARCH GROUP / SUPERVISOR

The Fabricación Integrada (CFI) research group comprises 20 researchers from the mechanical engineering and chemical process engineering Dpts. The group has undertaken a considerable amount of research related to Additive Manufacturing (AM) techniques mainly involving FDM, SLS, electroforming, rapid tooling and vacuum casting, as well as on polymer processing and bio-composites. Prof. Dr Mario D. Monzón has been a lecturer in the Mechanical Engineering Department of ULPGC since 1989. He is the manager of CFI research group and coordinator of ULPGC PhD programme. His main field is additive manufacturing/rapid prototyping, and polymer processing. He is a convenor of the JWG ISO TC261 "Additive Manufacturing for Plastics". More than 35 research projects and 13 research contracts with companies, coordinating most of them as main researcher. Around 60 publications and 46 papers. His will be the project coordinator, and will be responsible of training ESRs in bioprinting, characterization of materials and scaffolds (20%). The last relevant projects related to the topic of additive manufacturing/biofabrication are:

•Lifelong Programme-Leonardo Da Vinci: No. 2010-1-ES1-LEO05-21195-KTRM (2010-2012). Knowledge transfer of Rapid Manufacturing
•SUPPORT (DPI2015-71073-R). Improvement of osseointegration of titanium porous structures by design optimization and superficial modification with polymeric coatings.
•FP7- NMP-2012 , SASAM Support action for standardization in additive manufacturing
•BAMOS — H2020-MSCA-RISE-2016/, Biomaterials and Additive Manufacturing: Osteochondral Scaffold innovation applied to osteoarthritis. GA 734156
•BIOAM. Improvement of the biofunctionality of polymeric scaffolds obtained by additive manufacturing. RETOS Investigación MICINN (Spain). DPI2017-88465-R
•BRAINIT. Brain Revealed: Innovative Technologies in Neurosurgery Study. Erasmus +. 2018-1-R001-KA203-049317
•EDM-ADDITIVE. New EDM electrodes manufactured with electrically conductive materials by additive manufacturing. SMART EUREKA CLUSTER. S0110

PROJECT DESCRIPTION

(Max. 1800 caracteres con espacio): Breve descripción sobre el proyecto / línea de investigación en el que se acogería al investigador/a MSCA.

- **TITLE: 4D optimization of degradable biopolymeric scaffolds**

- **RESEARCH DESCRIPTION:** In the field of tissue engineering and additive manufacturing of scaffolds, development of a methodology to model the degradation process and optimize the scaffold taking into account this degradation. will 1) test under static or dynamic (bioreactor) conditions the degradation process (enzymatic and hydrolytic) of different biomaterials, measuring the weight loss, mechanical properties, molecular weight and degree of crystallinity; 2) develop a degradation model based on experiments as input of the optimization methodology; and 3) implement a methodology for optimizing the geometry and material of the scaffold, taking into account the degradation during the time (4D), by using genetic algorithm, methamodels and design of experiments, based on Finite Elements Analysis (FEA).

- **REQUIREMENTS OF CANDIDATES**:

The candidate will be a mechanical engineer, manufacturing engineer, materials engineer or bioengineer with interest in additive manufacturing, biomaterials,biofabrication and optimization methods.