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

Contact Person/Scientist in charge *(data of the principal investigator of the research group/lab or scientific supervisor)* **Name**	Soulé
Surname	Jean-François
Email	jean-francois.soule@chimieparistech.psl.eu
Department /Institute /Centre *(data of the centre/department where the fellow would be located* **Name**	CSB2D Team / Institute of Chemistry for Life and Health Sciences (i-CLeHS) / Chimie ParisTech PSL
Address	11 rue Pierre et Marie Curie 75005 Paris
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)*	Chemistry (CHE)
Brief description of the Centre/Research Group/Team *(max. 1,600 characters including spaces: information about the research centre or research group, scientific staff. Please include URL if possible)*	This project will be conduct in the Institute for Life and Health Sciences (i-CLeHS) directed by Prof Carlo Amado in the team called namely the "Catalysis, Synthesis of Biomolecules and Sustainable Development team" (CSB2D). The team is composed of 6 staff members (1 Professors), 2 Postdoc researchers, 15 Ph.D. students and 8 Master students. The institute is localized at Chimie ParisTech PSL. The team has set relevant scientific objectives. The central theme of the CSB2D team is the development of innovative research in competitive fields of catalysis and synthetic methods and their applications to the synthesis of biorelevant targets. The team is well equipped to conduct this reach or have access to facilities, these include 300, 400 and 500 Mhz Bruker NMR, Mass Spectrometry; chiral-SFC, MBraun GloveBox, Shimazu GC-MS and GC-FIDs with autosamplers, Luminescence Spectrometer, UV-vis spectrophotometer, potentiostat, flow reactors, benchtop NMR spectrometer (60 MHz). Jean-François Soulé is full professor at Chimie ParisTech since September 2022, and his research revolves around the theme of homogeneous catalysis. There are two major activities 1) developing C–H bond functionalization using Rh catalysis and mechanistic investigations, and 2) development of photoredox catalysts and photoinduced reactions with a complete mechanistic understanding. https://www.chimieparistech.psl.eu/recherche/les-laboratoires/i-clehs/ http://www.jfsoule-chem.com

Project description / Topic of interest *(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)*	Carboxylic acids are essential building blocks in organic synthesis, and many commodity products (*e.g.*, drugs, agrochemicals, organic materials) contain such functionality. Commonly carboxylic acids are generally prepared from alcohols by oxidation reactions. This approach is often laborious as its employs toxic oxidizing agents. This proposal seeks to improve on current technology by introducing carboxylic groups from alkanes *via* C–H bond carboxylation while also proposing a new avenue for carbon dioxide valorization. The innovation to activate carbon dioxide and overcome the endothermic reaction profile relies on generating carbon dioxide radical anion using visible-light photocatalysis. Specifically, the designed of bifunctional iridium-based photocatalysts exploiting the second sphere chelating effect to facilitate the single electron reduction of carbon dioxide and stabilize radical intermediates underpins this proposal and will enable new catalytic tools for late-stage carboxylation of alkanes. The research will provide innovation in synthetic methodology using photo redox catalysis and carbon dioxide activation with significant translatable opportunities that end-users can adopt in both academic and industrial sectors. In addition to the synthetic research objectives, this project also aims to establish analytic new methods for characterizing carbon dioxide transient radical species by bringing together researchers from interdisciplinary fields. Particular focus will be on utilizing the Fellowship to build infrastructure and support the early-career scientist to learn multidisciplinary approaches and set up innovative training networks sustainable for the long-term.
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)*	CV, letter of motivation, before the 15th of May 2023