Marie Skłodowska Curie Individual Fellowship 2020

Expression of Interest for hosting Marie Curie Fellows

1. Supervisor (name and e-mail address)

Ivano Alessandri e-mail: ivano.alessandri@unibs.it

2. Department (name and address)

Department of Information Engineering, via Branze 38 25123 Brescia (Italy)

3. Panel (choose one)

□x Chemistry (CHEM)
□ Social Sciences and Humanities (SOC)
□ Economic Sciences (ECO)
□ Information Science and Engineering (ENG)
□ Environment and Geosciences (ENV)
□ Life Sciences (LIF)
□ Mathematics (MAT)
□ Physics (PHY)

4. Description of your research activities (max 10 lines)*

Our research interests span from the synthesis and characterization of materials for catalysis (*e.g.* photochemical fixation of carbon dioxide, oxygen evolution reactions) energy conversion and environmental remediation to the development of optical nanoantennas and smart systems for Raman microspectroscopy and optoelectronic sensing.
We are currently working in three main directions:
-New materials and smart systems for an efficient capture of carbon dioxide and its conversion into chemical feedstocks
- All dielectric or hybrid metal/dielectric nanoantennas for Raman spectroscopy and multimodal sensing
- Synthesis and development of environment-friendly hydrogels for large area electronics (in collaboration with prof. Fabrizio Torricelli-University of Brescia).

5. Key-words

Smart catalysts, Surface Enhanced Raman Scattering, carbon dioxide capture and conversion, organic field effect transistors

6. Short CV of the supervisor (max 5 lines)

Ivano Alessandri is Associate Professor of Chemistry at the Department of Information Engineering and the team leader of the "Chemistry and Nanotechnology Group" http://amd-c4t.unibs.it/ at the University of Brescia (Italy). He is also a Senior Researcher at the Italian National Consortium for Materials Science and Technology (INSTM) and Research Associate to the Italian National Council for Research (CNR-INO). Updated publications: https://scholar.google.it/citations?user=sO6_QeUAAAAJ&hl=en

7. List of 5 main publications of the supervisor

1. I. Alessandri*, Enhancing Raman scattering without plasmons: unprecedented sensitivity achieved by TiO2 shell-based resonators, **J. Am. Chem. Soc.** (2013) 135, 5541-5544
2. I. Alessandri*, J. R. Lombardi, Enhanced Raman Scattering with dielectrics, **Chem. Rev.** (2016) 116, 14921−14981
3. I. Vassalini, L. Borgese, M. Mariz, S. Polizzi, G. Aquilanti, P. Ghigna, A. Sartorel, V. Amendola, I. Alessandri*, Enhanced electrocatalytic oxygen evolution in Au-Fe nanoalloys, **Angew. Chem. Int. Ed.** (2017), 56, 6589-6593
4. I. Vassalini, I. Alessandri*, "The phactalysts": Carbon Nanotube/TiO_2 composites as phototropic actuators for wireless remote triggering of chemical reactions and catalysis, **Nanoscale** (2017), 9, 11446-11451.
5. M. Salmistraro, A. Schwartzberg, W. Bao, L. E. Depero, A. Weber-Bargioni, S. Cabrini, I. Alessandri*, Triggering and monitoring plasmon enhanced reactions by optical nanoantennas coupled to photocatalytic beads, Small (2013) 9, 3301-3307.

*: corresponding author

*Please consider that the preparation of a Marie Curie proposal requires some time. Fellow and supervisor have to agree on a project and training opportunities for the fellow.