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Code:

Project: SUNRISE

Area: Advanced Materials for Energy

Area leader: Prof. Joan Ramon Morante

Group: Solar Energy Materials and Systems, SEMS

Group leader: Prof. Alejandro Pérez Rodríguez

The Solar Energy Materials and Systems (SEMS) group announces an experienced postdoctoral researcher position (R2.2.1) in the frame of the SUNRISE project, in the research line of:

Development of tools and methodologies based on spectroscopic techniques for real-time laminated glass classification in glass recycling lines.

Position description: The candidate will carry out a multidisciplinary technical and scientific activity centered in the development and implementation of a multi-sensor tool for sorting and classifying polyvinyl butyral (PVB) laminated glass waste in recycling lines in the frame of the H2020 European project "SUNRISE" (<https://sunrise-project.eu/>). This will include the advanced characterization of laminated glass waste using a combination of different spectroscopic techniques. In parallel, the candidate will work on developing process monitoring methodologies and integrated tools based on the employed characterization techniques and optimized for their implementation in real glass recycling lines.

Tasks to develop: The candidate will work on the advanced spectroscopic characterization and combinatorial data analysis of PVB laminated glass samples with different plasticizers and additives using Raman spectroscopy, IR spectroscopy, transmittance/reflectance spectroscopy and fluorescence, among others. In addition, the candidate will be in charge of the optical and mechanical design and implementation of dedicated multi-sensor tools for laminated glass classification based on the spectroscopic techniques mentioned above together with suitable in-line monitoring methodologies. This will include the 3D design of the tools, the definition of optimized optical components and configuration, the implementation of prototypes through 3D printing, the design of multiplexed signal acquisition strategies, the adaptation of the acquisition conditions to in-line requirements, the testing and validation of prototypes at laboratory scale and the final implementation and validation of the final tools. This will require that the candidate coordinates the tasks of the project related to these activities including the managing and coordination other workers from the research group as well as the interaction with the rest of the partners of the project. The candidate will also be in charge of the preparation of: i) internal reports of the results obtained, ii) project reporting documents such as project meeting presentations and project deliverables, iii) preparation of scientific papers, iv) preparation of dissemination activities.

Requisites: The candidate must be in possession of a PhD degree in Physics, Applied Sciences, Engineering, or equivalent obtained at least 2 years before the incorporation date, and have demonstrable experience in:

- Experience in development and characterization of materials
- Knowledge in optical and spectroscopic characterization of materials (especially in the techniques specified above)
- Development of methodologies based on optical techniques (especially for process monitoring or in-line applications)
- Combinatorial analysis
- Design and prototyping of optical-based tools
- Management and coordination of research activities
- Management of people
- Coordination of activities in European projects
- High impact factor 1st quartile scientific publications

In addition, the candidate must possess the following skills:

- Experience in 3D design software such as Solidworks or Autodesk Inventor
- Experience in optical prototyping by 3D printing

The following additional skills/experience will be well evaluated:

- Experience in project proposals preparation
- Autonomy and leading capabilities
- Programming in Python (or similar)
- Machine learning algorithms
- Possibility to start the work contract in January 1st 2021

Candidacy: Send your CV, a motivation letter and your PhD diploma to Dr. Victor Izquierdo-Roca (vizquierdo@irec.cat) (with copy to Prof. Alejandro Pérez-Rodríguez, e-mail aperezr@irec.cat) indicating Ref. 69/2021 in the subject of the e-mail.

Deadline: December 5th 2021

Starting date: January 1st 2021

Expected duration of contract: 12 months