Marie Skłodowska-Curie fellowship in the field of polymer chemistry

The **SMART** Innovative Training Network (ITN) is a joint venture between academia and industry, providing scientific and personal development of young researchers in the multidisciplinary fields of soft robotics and smart materials. The fellowships are funded as part of the Marie Skłodowska-Curie Actions (MSCA) Innovative Training Networks under the European Commission's H2020 programme. The successful candidates will be hosted at leading international universities, research centres and companies and will contribute to the project "**S**oft, **S**elf-responsive, Smart **MA**terials for **R**obo**T**s" as early stage researchers (ESRs).

The Polymer Competence Center Leoben GmbH (PCCL) is the leading Austrian "Center of Excellence" for cooperative research in the area of polymer engineering and sciences. In close cooperation with its scientific partners at four universities 100 highly qualified employees are active in a wide field of applications for plastics ranging from automotive and aircraft, to packaging and photovoltaic industries. By linking scientific knowledge to the industrial need for innovation PCCL contributes to the competitiveness of its industrial partners who cooperate on the basis of medium- and long-term R&D-projects with the PCCL.

As of **February 1st 2022** the following Marie Skłodowska Curie fellowship will be assigned:

Design of functional polymer systems for 4-D printing techniques
(JOB-ID: 20211129)

Project description

4D printing of stimuli sensitive polymers has the potential to introduce additional functionalities to a wide variety of practical applications and further to fabricate customized functional devices. Within this project photopolymers are developed comprising stimuli sensitive groups that change the network structure, network density, (thermo-)mechanical properties but also surface properties in response to external trigger. Taking advantage of the high reactivity and excellent mechanical properties, 3D printed stimuli sensitive polymers will be based on photopolymerization of (methyl-) methacrylates as well as on "click" chemistry, suitable for DLP (digital light processing) based printing processes. Advancing from investigations of 2D photopolymers, complex 3D architectures with smart functionality (e.g. self-healing, shape memory, etc.) will be manufactured by employing additive manufacturing techniques. The smart functionality based on stimuli-triggered dynamic bond cleavage and formation mechanisms of the polymers will be investigated and the potential and limitations of the designed architectures for different transformations (e.g. gripping of objects) and applications in soft robotics will be evaluated.

The aim of the project is to obtain:

- Comprehensive knowledge of synthesis methods for stimuli sensitive monomers
- Expertise on additive manufacturing techniques for stimuli-triggered polymer networks
- Detailed understanding of advanced characterization methods for stimuli sensitive monomers and polymers (thermal and mechanical testing; optical, infrared, Raman and fluorescence spectroscopy; NMR spectroscopy)
- In-depth knowledge of using the developed material concepts for soft robotic applications

Your profile

- ✓ *Be an Early-stage researcher (ESR). ESRs are those who are, at the time of recruitment by the host, in the first four years (full-time equivalent) of their research careers. This is measured from the date when they obtained the degree which formally entitles them to embark on a doctorate.*
- ✓ *Compliance with the mobility rules laid out in the <u>MSCA ITN guidelines:</u> At the time of recruitment, candidates **must not have legally resided or have had their main activity** in the country of their host organization for more than 12 months in the last 3 years immediately prior to their recruitment*
- ✓ *Willingness to move countries for ESR placement and temporary secondments*
- ✓ *Completed degree (Mag., Dipl.-Ing. or MSc.) (or obtaining a diploma before 01/02/2022) in the field of natural science or engineering*
- ✓ *Profound knowledge in polymer chemistry*
- ✓ *Fluent in English: Network fellows (ESRs) must demonstrate that their ability to understand and express themselves in both written and spoken English is sufficiently high for them to derive the full benefit from the network training.*
- ✓ *Advanced knowledge of ORIGIN- and MS Office*
- ✓ *Personal initiative, reliable, responsibility, teamwork and communication skills*

We provide

- ✓ *Advanced research in a multi-disciplinary team*
- ✓ *Excellent contacts to industry as well as to national and international research organizations*
- ✓ *Additional educational program involving training schools, workshops and summer schools*
- ✓ *Flexible working hours, 40h per week*
- ✓ *Possibility to perform a PhD at the Montanuniversitaet Leoben*

Salary

The successful candidates will receive an attractive salary in accordance with the MSCA regulations for Early Stage Researchers (http://ec.europa.eu/research/mariecurieactions/) in the form of a scholarship. The exact salary will be confirmed upon appointment and is dependent on the country correction factor (to allow for the difference in cost of living in different EU Member States). The salary includes a living allowance, a mobility allowance and a family allowance (if already married).

Application

Please send your application (motivation letter, CV) along with copies of your certificates and diplomas to jobs@pccl.at, indicating the **Job-ID 20211129**.