



STORM-BOTS

Guide for Applicants

This guide provides practical information to potential applicants on how to apply and describes the selection and assessment procedure.

More information at <http://storm-bots.eu>

Any question can be sent to pm-storm-bots@csic.es

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Content

1. ABOUT STORM-BOTS	3
1.1 STORM-BOTS RESEARCH PROGRAMME	3
1.2 STORM-BOTS TRAINING PROGRAMME	3
1.3 ESR POSITIONS AND HOST ORGANISATIONS	4
2. CALL FOR APPLICANTS	6
2.1 WHY TO APPLY	6
2.2 WORK CONDITIONS	7
2.3 WHO CAN APPLY	7
3. RECRUITMENT	8
3.1 APPLICATION:.....	8
3.2 SELECTION:.....	9

Funded by the European Commission through the Horizon 2020 Marie Skłodowska-Curie ITN Programme, the STORM-BOTS network offers **13 Early Stage Researchers (ESRs) positions** to provide high-level training in the field of liquid crystal based soft robotics. The most talented and motivated candidates will be selected for advanced multidisciplinary research training, preferably starting on May/September 2021.

The recruitment will be **a transparent, open and equal process** following the guidelines follows [the European Charter & Code of Conduct for the Recruitment of Researchers](#)

The STORM-BOTS consortium offers and promotes a diverse and inclusive environment. We welcome applications from people in all diversity groups regardless of age, disability, gender, nationality, race, religion or sexual orientation.

1. ABOUT STORM-BOTS

1.1 STORM-BOTS RESEARCH PROGRAMME

The research programme of STORM-BOTS, implemented through thirteen Early Stage Researchers, has as a main scientific objective the development of an advanced and versatile technology platform, relying on liquid-crystal materials responsive to different stimuli, advanced manufacturing tools as well as theory and modelling, to progress towards robotic functions.

The implementation of this programme will enable the creation of soft responsive components and surfaces with unparalleled functions and performance, contributing to further develop robotics and haptics.

The research programme will target three specific objectives through their corresponding work packages:

To develop an experimental toolbox comprising liquid-crystal materials and advanced manufacturing tools to fashion them into soft actuation and robotic systems. Work Package 1: Materials design and development.

To generate a theoretical framework and computational tools to better understand how different factors, including materials, stimuli, geometry and director pattern, control the active shape-morphing of liquid crystal elastomers. Work Package 2: Theory and modelling towards soft robotic functions.

To progress novel concepts and designs enabling the creation of advanced liquid crystal-based soft actuating elements and robotic functions. Work Package 3: Soft robotic functions and devices.

1.2 STORM-BOTS TRAINING PROGRAMME

STORM-BOTS aims to train a new generation of highly-skilled scientists providing them with a solid multidisciplinary training in the field of Liquid Crystal-based actuators and robotic systems, a dynamic and quickly developing field which urgently requires a new generation of researchers capable of contributing to complementary disciplines and sectors.

Thus, STORM-BOTS' challenging and comprehensive training programme combines an advanced interdisciplinary and intersectoral scientific training with the development of generic academic and non-academic skills and a personalised career guidance. Overall, it will:

- Take advantage of the specific research expertise of internationally-recognised leaders in the relevant fields and of the state-of-the-art infrastructure of the participants.
- Exploit synergies between the different scientific fields within a truly interdisciplinary research effort.
- Establish and monitor a Personal Career Development Plan for each ESR.
- Promote meaningful exposure of the ESRs to different sectors in an international environment.

All ESRs will end up defending their PhD theses except for ESR13, hosted at the industrial partner PRECEYES.

The SECONDMENT programme will complement the local training of the ESRs by exposing them to different disciplines and to different sectors (academic and industrial) in an international environment.

Each ESR will have a specific and well-defined route to accomplish their Individual Research Project and acquire knowledge and skills for their future employability in academic and non-academic sectors.

1.3 ESR POSITIONS AND HOST ORGANISATIONS

ESR 1: Electrically driven polymers for active antennae.

Recruiting institution: Eindhoven University of Technology (NL).

Main supervisor: Danqing Liu.

Co-supervisors: Nadia Grossiord, Anne Helene Gelebart (SABIC).

Secondments: Sabic (NL) and University of Cambridge (UK).

PhD Programme in Chemical Engineering - Eindhoven University of Technology

ESR 2: Liquid crystal chemoresponsive actuator.

Recruiting institution: University of Zaragoza (ES).

Main supervisor: Jesús del Barrio.

Co-supervisor: Carlos Sánchez Somolinos (CSIC).

Secondments: Spanish National Research Council-CSIC (ES), Aqdot (UK) and Tampere University (FI).

Doctoral Programme in Organic Chemistry – University of Zaragoza

ESR 3: Multimaterial 4D printed components and devices.

Recruiting institution: Spanish National Research Council-CSIC (ES).

Main supervisor: Carlos Sánchez Somolinos.

Co-supervisors: Dick Broer (Tue), Jesús Martínez de la Fuente (CSIC).

Secondments: Eindhoven University of Technology (NL), PRECEYES (NL), University of Cambridge (UK) and Netherlands Organisation for Applied Scientific Research (NL).

Doctoral Programme in Physics – University of Zaragoza

ESR 4: 4D Printed biomimetic soft robotic functions.

Recruiting institution: Spanish National Research Council-CSIC (ES).

Main supervisor: Carlos Sánchez Somolinos.

Co-supervisor: Antonio DeSimone (SSSA).

Secondments: University of Zaragoza (ES), Sant'Anna School for Advanced Studies (IT) and BeOnChip (ES).

Doctoral Programme in Physics – University of Zaragoza

ESR 5: Magnetic field assisted assembly and alignment of LCEs.

Recruiting institution: Max Plank Society (DE).

Main supervisor: Peer Fischer.

Co-supervisor: Frank Giesselmann (Stuttgart University).

Secondments: Aqdot (UK), Spanish National Research Council-CSIC (ES) and Sant'Anna School for Advanced Studies (IT).

Doctoral Programme in Chemistry – University of Stuttgart

ESR 6: Finite element models for dynamical actuation of LC sheets.

Recruiting institution: Sant'Anna School for Advanced Studies (IT).

Supervisor: Antonio DeSimone.

Co-supervisor: Alessandro Lucantonio (SSSA).

Secondments: eXact Lab (IT), Eindhoven University of Technology (NL) and Max Plank Society (DE).

PhD in Biorobotics - Sant'Anna School for Advanced Studies

ESR 7: Putting Gauss Curvature to Work.

Recruiting institution: University of Cambridge (UK).

Supervisor: John Biggins.

Co-supervisor: Mark Warner (U Cam).

Secondments: PRECEYES (NL), Tampere University (FI) and Eindhoven University of Technology (NL)

PhD Programme in Engineering – University of Cambridge

ESR 8: Electrically driven liquid crystal actuator.

Recruiting institution: Eindhoven University of Technology (NL).

Supervisor: Danqing Liu.

Co-supervisor: Carlos Sánchez-Somolinos (CSIC).

Secondments: Sant'Anna School for Advanced Studies (IT), Spanish National Research Council-CSIC (ES), Netherlands Organisation for Applied Scientific Research (NL) and Sabic (NL).

PhD Programme in Chemical Engineering - Eindhoven University of Technology

ESR 9: Liquid crystal actuator with electrical feedback mechanism.

Recruiting institution: Eindhoven University of Technology (NL).

Supervisor: Danqing Liu.

Co-supervisor: Dick Broer (Tue).

Secondments: Spanish National Research Council-CSIC (ES), PRECEYES (NL) and University of Cambridge (UK).

PhD Programme in Chemical Engineering - Eindhoven University of Technology

ESR 10: Magneto-photoresponsive actuators with complex and reconfigurable shape.

Recruiting institution: Tampere University (FI).

Supervisor: Arri Priimägi.

Co-supervisor: Hao Zeng (TAU).

Secondments: Max Plank Society (DE), NanoScale Biomagnetics (ES) and Spanish National Research Council-CSIC (ES).

PhD Programme in Engineering & Natural Sciences – Tampere University

ESR 11: Light-Fuelled Robotics: Going under Water.

Recruiting institution: Tampere University (FI).

Supervisor: Arri Priimägi.

Co-supervisors: Hao Zeng (TAU), Dick Broer (Tue).

Secondments: Eindhoven University of Technology (NL) and Lyncée (CH).

PhD Programme in Engineering & Natural Sciences – Tampere University

ESR 12: Electrically driven sensor skins for LCE-based soft robotics.

Recruiting institution: Netherlands Organisation for Applied Scientific Research - TNO (NL).

Supervisor: Charlotte Kjellander.

Co-supervisors: Peter Zalar (TNO), Danqing Liu (Tue).

Secondments: Eindhoven University of Technology (NL), Spanish National Research Council-CSIC and Vention (NL).

PhD Programme in Chemical Engineering – Eindhoven University of Technology

ESR 13: Definition and validation of adaptive LCE-based instruments.

Recruiting institution: PRECEYES (NL).

Supervisor: Marc De Smet.

Co-supervisor: Maarten Beelen (PREC).

Secondments: Eindhoven University of Technology and Spanish National Research Council-CSIC (ES).

ESR13's global training is mainly aimed at product and business development in the medical device sector and will not enrol in a PhD programme.

2. CALL FOR APPLICANTS

2.1 WHY TO APPLY

You will be trained in a **Research excellence** environment, both at your host institution and during your secondments.

You will work in an **Attractive Institutional Environment** within dynamic groups with state-of-the-art equipment developing individual research projects in the framework of a unique and innovative research programme.

STORM-BOTS will offer you **Interdisciplinary Research Options** through an interdisciplinary research programme and the exposure to a manifold of expertise in different disciplines.

You will have **Exposure to industry and other relevant employment sectors** via the active participation of non-academic institutions across all parts of the research and training programmes.

The consortium, with partners from 7 different countries, will naturally offer **International networking**.

The comprehensive network-wide courses and activities offered in STORM-BOTS, supplemented by the local courses, will provide you with a comprehensive **transferable skills training**.

2.2 WORK CONDITIONS

You will work under a 36-month employment contract with the competitive **conditions and salary** adapted to the life cost in each host country, set by the **MSCA ITN programme**.

The MSCA ITN programme offers a highly competitive and attractive salary and working conditions. The successful candidates will receive a salary in accordance with the MSCA regulations for ESRs, according to the national rules of the country with full social security benefits.

The successful candidate will receive a financial package plus an additional mobility and family allowance according to the rules for Early Stage Researchers (ESRs) in an EU Marie Skłodowska-Curie Actions Innovative Training Networks (ITN):

- Living Allowance of €3270/month (gross) to be paid in the currency of the country where the Host Organisation is based and with a correction factor to be applied per country. The exact (net) salary will be confirmed upon offer and will be based on local tax regulations and on the country correction factor (to allow for the difference in cost of living in different EU Member States)
- Mobility allowance of €600/month to be paid to all ESRs recruited
- Family allowance of €500/month, depending on family situation at the time of recruitment.

Additional information can be found in [Information Note for Marie Skłodowska-Curie fellows in Innovative Training Networks \(ITN\)](#)

2.3 WHO CAN APPLY

All applicants must, at the date of the recruitment, comply with the following ELIGIBILITY CRITERIA:

-Early Stage Researcher status: At the time of appointment, applicants must be in the first four years (full-time equivalent research experience) of their research careers. Full-time equivalent research experience is measured from the date when the researcher obtained the first degree entitling him/her to embark on a doctorate. At the time of recruitment, applicants must not hold a doctoral degree or equivalent.

-Mobility Rule: Applicants can be of any nationality. However, applicants must not have resided or carried out their main activity (work, studies, etc.) in the country of the recruiting organization for more than 12 months in the 3 years immediately before the appointment. This excludes short stays such as holidays or compulsory national service.

In addition: applicants must be proficient in **English** language. **Additional requirements**

may apply, depending on your choice of host institution. Check the information per position.

Specific admission requirements for the doctoral programme in which the ESR is to be enrolled must be taken into account. Note all ESRs will enrol in a PhD programme except for ESR13.

*Students currently in the final year of a Master's degree are encouraged to apply.

3. RECRUITMENT

3.1 APPLICATION:

Your application consists of two parts:

1. **Online application form:**

To submit your application, please fill in the requested data in the online application form. It will be available from March 15th to April 11th 2021, 23:59 (CET).

Sections in the application form:

- Candidate personal information
- Eligibility information: Country of residence of the last 3 years
- Information about your graduate and postgraduate degree and qualifications
- Work experience
- English proficiency

You will have to indicate your **preferred position(s), up to a maximum of three**, in order of preference and, optionally, indicate which other positions you are willing to be considered for, if you are not selected for those indicated as preferred.

2. **Attachments** (all merged in one pdf file): Any document not originally in English must be provided together with an English translation. Due to COVID-19, an unofficial translation is acceptable but official translations will have to be provided before the recruitment.

- Curriculum Vitae (free format)
- Motivation letter
- 2 recommendation letters
- English language certificate (optional)*
- University degrees and MsC diplomas**
- Official transcript of your records

* Check the English language requirements of the recruiting institution and of the PhD programme (if applicable) associated with your preferred position(s).

**For candidates currently completing degrees, include an official certificate confirming student status and due date of degree examination.

** For students from outside the European Higher Education Area (EHEA), a document from the Home University certifying that the candidate's degree qualifies them to undertake doctoral studies at that University is required.

3.2 SELECTION:

1.- APPLICATION (as described in section 3.1)

2.- ELIGIBILITY CHECK:

The Management Team of STORM-BOTS will gather the information from all candidates and will check that they comply with the eligibility criteria (Early Stage Researcher status and mobility rule) and that the applications are complete, in English, and submitted before the deadline.

The initial check of the eligibility criteria will have to be formally confirmed by each host institution at the time of recruitment of the appointed candidates.

Information from eligible candidates directly applying to each position or giving their permission to be considered for others, will be distributed among the host institutions. Not eligible candidates will be notified via email.

3. - ASSESSMENT:

A Selection Committee for each position will be set up at each host institution, led by the supervisor. Each Selection Committee will assess all candidates applying for the ESR position according to their academic profile, personal motivation, relevant background, professional experience, scientific knowledge, transversal skills, soft skills and English proficiency. Each ESR Selection Committee will short-list at least the best 3 candidates among those applying for the ESR position and produce a reserve list of potentially interesting candidates, including those who indicated they were willing to be considered for that position.

4.- INTERVIEW:

Each Selection Committee will interview the short-listed candidates for each ESR position and will produce a ranked list of candidates that qualify for the position.

5. - DECISION:

The Recruitment Committee will

a) Elaborate the final ranked list of the selected candidates for all the positions, considering the candidates' preferred choices as expressed in her/his application form.

The selected candidates will be formally informed of the result. If the candidate accepts the position he/she will be asked to sign a formal agreement of commitment pending the formal eligibility check to be carried out by the host institution and the confirmation of their PhD enrolment, in the cases that this applies.

If the candidate rejects the position, the next candidate in the ranked list will be formally informed of the result and follow the same procedure until the position is filled, or the ranked list is over.

b) Produce the final reserve list, considering the candidates' preferred choices and their permission/no permission to be considered for other positions.

In the event of any position not being filled, the reserve list candidates will be informed and invited to take part in a **second evaluation round** following an equivalent procedure as in the first one. Those candidates not selected for the positions will be accordingly notified by email.

If still some position remains to be filled after the second evaluation round, **a new public call** will be considered.