

SMARTI

European Training Network
2017-2021



Early Stage Researcher with PhD enrolment

Sustainable **M**ulti-functional **A**utomated **R**esilient **T**ransport **I**nfrastructures **ETN** will bring together a stimulating platform where the stakeholders of the transport infrastructure sector will work alongside world-wide experts in smartening of systems (developers of high-tech sensors, advanced monitoring equipment, automated structures, etc.) with direct support from the roads, railways and airports managers. As a result, SMARTI ETN will create a new generation of highly-skilled and appealing professionals that will be in great demand in this rapidly expanding field and will benefit Europe and developing countries. *Do you want to be one of them?*

Project 5

“SHERI”: Sustainable Harvesting of Energy from Rail Infrastructure (WP2-ESR5)

The University of Nottingham (UK)



UNITED KINGDOM • CHINA • MALAYSIA

Expected Collaborators

Eiffage (France), AECOM (UK)



Project Summary/Objectives

The overall goal is to develop a technique for energy collection and storage in the rail environment that could be used for non-motive power (e.g. signal and sign, work-zone lighting, switch heating, station illumination, etc.). As initial steps in such a process, the more limited aim of this project is to find and optimize simple and economic means of abstracting mechanical energy from passing trains and/or solar energy falling on the rail infrastructure, without resorting to material- and energy-intensive PVs and batteries, so that sustainable and readily distributed systems can be deployed by subsequent implementers.

Environment

The research is carried out within the framework of the Marie Curie European Training Network 'SMARTI' with opportunities to join network wide training events and international collaboration. The candidate will work within the Work Package SMARTI Prototypes that will investigate innovative transport infrastructure prototypes for roads, pavements and airports. Furthermore the candidate will benefit from collaborative research with 14 similar research positions in the network.

The project will be developed through planned international collaborations with at least two international partners. The University of Nottingham will provide expertise with railway trackbed design, sustainable engineering, energy harvesting concepts and materials. The partnership with strategic partners will provide:

- EIFFAGE: understand the contracting business in the rail sector and make initial plans for a pilot-scale implementation; on-site experience, implement energy harvesting pilot-scale equipment on site.
- AECOM: design and safety case for railway implementation, site visits, constraints on engineering implementation.

The successful applicant will be recruited by The University of Nottingham and will register for a 3 year PhD at the same institution. The total funding available for each position is in line with the Marie Curie ETN Scheme, and comes to €37320 per year. This amount will be multiplied by a country factor¹ and on top an extra allowance will be available to cover mobility expenses. The fellows will pay taxes according to the rules of the country of recruitment. A career development plan will be prepared for each fellow in accordance with his supervisor and will include training, planned secondments and outreach activities.

¹ UK factor = 1.203

Application Process

- (1) SMARTI ETN will perform the recruitment of all the Early stage Researchers (ESR) through smartietn.eu website
- (2) Check you meet Eligibility criteria and Specific requirements for the ESR position project/s you are applying for.
- (3) Prepare the following application documents (in English):
 1. A curriculum vitae, including contact details, education (at University level and other), work experience, prizes/awards, language skills, etc... (max. 2 pages). The CV should reflect a representative array of achievements and qualifications appropriate to the post for which application is being made.
 2. Official academic record of undertaken courses & grades for Bachelor (and Master if required in specific criteria) degree.
 3. A motivational letter in which the applicant describes his or her motivation to pursue postgraduate studies and to conduct the research project/s applied for. Mention the ESR project number or numbers (in the latter indicate order of preference if any) on your motivational letter and the subject of the email.
 4. A reference letter.
- (4) Upload your documents in smartietn.eu before the 1st June 2017 deadline.
- (5) The documents provided will be used to select the best candidates. Applications will be analysed by a **selection committee led by the coordinator and formed by both academic and industry partners**. Recruitment procedures will be open, efficient, transparent and supportive, as well as tailored to the type of positions advertised. All Institutions value diversity and are committed to equality of opportunity.

Eligibility Criteria

- Applicants can be of any nationality. They are required to undertake transnational mobility (i.e. move from one country to another) when taking up their appointment. Nationality is therefore not a criterion. Rather the location of the researcher's residence or main activity during the 3 years prior to their recruitment is determining. *(This means: You can only apply to a project which is hosted in a country in which you did not reside or carry your main activities (such as work or study) for more than 12 months within the last 3 years. This excludes short stays such as holidays or compulsory national service).*
- Applicants must be Early-Stage Researchers (ESRs) which means, at the time of recruitment by the host organisation, they must be in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree. For research experience it is meant since the date that the graduate has been awarded with a degree allowing him/her to embark on a PhD programme (e.g. date of completing a masters degree).

Responsibilities

	Main Responsibilities	% time per year
1.	Research in the field of energy harvesting	70
2.	Training as per the Marie Skłodowska-Curie European Training Network "SMARTI" training programme	15
3.	Presentation of activities to other SMARTI participants and others	5
4.	Assisting with related research activities and supporting students involved with them	5
5.	Preparing research publications	5

Specific Requirements

	Essential	Desirable
Qualifications/ Education	a) Masters level education in engineering or applied mathematics b) English native speaker / recent certification in English to IELTS level 6 with minimum 5.5 in any part	
Skills/Training	Computational efficiency; some facility with Matlab;	Facility with Finite Element or Finite Difference computer programs.
Experience		Work on live railway sites; Practical laboratory / workshop experience
Personal Qualities	Inquisitiveness, Self-motivation, Flexibility,	Team player

Do not wait, apply for this position via the following link

<http://smartietn.eu>

Any question on:

- this specific project, contact Andrew Dawson, Andrew.dawson@nottingham.ac.uk
- the SMARTI ETN project, contact Dr Davide Lo Presti, Davide.Lopresti@nottingham.ac.uk

Please note that applications sent directly to these email addresses will not be accepted.