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MOST INNOVATIVE COUNTRY!

LUXEMBOURG
INSTITUTE OF SCIENCE
AND TECHNOLOGY



PHD STUDENT IN DESIGN AND MANUFACTURING OF TAILORED LAMINATED COMPOSITE STRUCTURES (M/F)

Fixed term contract | 14 + 22 + 12 months extension | Fulltime/40h | Bascharge

Your work environment

The Luxembourg Institute of Science and Technology (LIST) is a Research and Technology Organization (RTO) active in the fields of materials, environment and IT. By transforming scientific knowledge into technologies, smart data and tools, LIST empowers citizens in their choices, public authorities in their decisions and businesses in their strategies.

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You will be part of the LIST Materials Research and Technology department

Through its research into advanced materials and processes, the department, with over 190 researchers and engineers, contributes to the emergence of enabling technologies that underpin the innovation processes of local and international industry. The department's activities hinge on four thematic pillars supported by dedicated platform specialists as below:

- nanomaterials and nanotechnology
- scientific instrumentation and process technology
- structural composite materials and manufacturing
- and functional polymer unit

The Structural Composites Unit is strategically positioned in the framework of National Composites Centre - Luxembourg initiative (NCCL) to address the development of high-performance and multifunctional polymer-based composites. The research team drives the next generation of composites engineering to bring about functional and ultra-lightweight materials and structures which are architected at several scales of observation up from their basic constituents, and covering interfaces and interphases at all levels. This work aims at advancing knowledge in experimental, and multi-scale and multifield modelling and design of multifunctional and ultra-lightweight and high-performance composites which are reliable and sustainable. Experimental and computational methodologies and tools are developed to cover the full composites development chain, from the engineering of materials and processes, through structural design optimisation, to manufacturing, and enable multi-objective performance optimization. Full-scale composite technology demonstrators are brought to the industry, hence making them available for Luxembourg, Grande Region and European societies.

The Structural Composites Unit hosts a FNR PEARL Chair with the project 'Multiscale data-driven virtual design for manufacturing of composite materials: Driving the next generation of ultra-lightweight additively manufactured fibre-reinforced polymers (DRIVECOMP).

Job reference: MRT-2020-011

Application file:

- A CV
- A motivation letter
- References names of two or three referees

Apply online:

<https://www.list.lu/en/jobs/>

Your working environment

The research department

<https://www.list.lu/en/mrt/>

<https://www.list.lu/en/jobs/researchers/>

The Luxembourg Institute of Science and Technology (LIST) is a mission-driven Research and Technology Organisation (RTO) that develops advanced technologies and delivers innovative products and services to industry and society. Located at the heart of Luxembourg's vibrant Research and Innovation Campus in Esch-Belval, LIST can ideally connect its over 500 specialists in materials, the environment and IT with virtually all of Luxembourg's other main research players such as the University of Luxembourg, LIH, LISER, Technoport, Luxinnovation and the National Research Fund. **LIST.lu**

The LIST is committed with equality of opportunities and gender balance



What you will be doing

In the framework of the DRIVECOMP project, you will be researching on the topic of design and manufacturing of tailored laminated composite structures.

The research entails:

- Developing efficient design and optimization approaches for 3D-shaped tailored composite shells in aeronautical applications
- Developing numerical analysis tools to address design-for-manufacturing of tailored composite laminates
- Manufacturing of designed composite structures by means of Automated Fiber Placement (in collaboration with the NCCL)
- Experimental structural testing and test data analysis of the manufactured structures in view of the validation of the developed design approach

You will be supported by the project team members to bring about the objectives of the PhD thesis, and will actively collaborate to reach the overall goals of the DRIVECOMP project.

Which profile we are looking for

- Master degree in Aerospace/Mechanical Engineering, or related field
- Excellent knowledge and proven experience on the analysis of mechanical behaviour of materials and structures are required
- A good background with analytical and numerical methods for structural analysis is mandatory
- Experience with analysis, design and manufacturing of advanced structural composites is an advantage
- Substantial knowledge about the field of fibre-reinforced composites in the aerospace and automotive sectors is an advantage
- A team player with the ability to work with a diverse range of colleagues in an international environment is needed
- Excellent written and oral communication skills are required
- Strong spoken and written English is mandatory
- Knowledge of French, German and / or Luxembourgish is considered an asset

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