**PHD STUDENT (M/F) — ROBUST PERFORMANCE PROCESSING ADDITIVES — IN-DEPTH CHEMICAL AND STRUCTURAL CHARACTERIZATION OF ADVANCED SMART POLYMER NETWORKS USING NMR AND OTHER SPECTROSCOPIC METHODS**

Fixed term contract. Fulltime 40h/w. Belvaux, Luxembourg.

**Context**

The Luxembourg Institute of Science and Technology (LIST) in partnership with Goodyear, and with the support of an Industrial Partnership Block Grant (IPBG) of the Luxembourg National Research Fund (FNR), will drive significant research and development focused on sustainable mobility and next generation tire materials.

The primary objective of the IPBG “Materials Research for Tire Technology” is to improve the understanding and performances of materials and processes used in future tire technologies. A future tire, as a highly complex composite material, needs to fulfil a wide range of performance criteria that cannot be achieved without expertise within chemistry and physics. The IPBG research project is then structured in four programs. Three materials-oriented programs (i.e., filler technology, polymer technology & additive technologies) that are supported by a fourth transversal program on advanced materials characterisation. Within this IPGB, 10 projects will be conducted by PhD students who will be oriented towards exploratory research on new material concepts and mechanistic insights.

For one of the 10 projects, we are looking for a PhD student in the field of advanced characterization of sulfur-silane networks by a combined and integrated spectroscopical, analytical and mechanical approach.

**Job description**

We are looking for a young researcher that is expected to strongly contribute to an ambitious project through the development of a doctoral thesis in the study of different hypothesis on the detailed chemistry and resulting structures of silica-silane nanocomposites. High-resolution as well as solid-state NMR techniques will be developed and applied in conjunction with XANES and Raman spectroscopy to discriminate between silane-silane self condensation and silane-polymer coupling reactions. These will be complemented by state-of-the-art microscopical analyses such as AFM, SEM, TEM-EDX and TEM-EELS. The selected PhD student will be enrolled in the Material Science Doctoral School of the University of Luxembourg and will develop the research project both at LIST and Goodyear.

**Required profile**

Master degree in Material Physics, or Materials Science or Physical Chemistry
Demonstrated competencies in spectroscopy and microscopy techniques, materials characterization and rubber chemistry will be highly valued
Sound knowledge of liquid and/or solid state NMR
Experience in the application of image analysis methods and tools is considered as an asset
Knowledge of Matlab, Origin, statistical software, etc. are considered as an asset
Collaborative skills, initiative, result oriented, organization, and capacity to work in an interdisciplinary environment
Proficient written and spoken English is mandatory

**We offer**

A fixed term employment contract for the duration of the PhD project
Very attractive salary package
Outstanding work environment both at LIST and Goodyear
Interdisciplinary and challenging research topics
Team building and integration activities within the project team and with other research teams at LIST and Goodyear

Other similar positions within the same project are also available. Should you be interested, we invite you to visit and apply to the offers provided in the annexed box.

Applications to more than one position are accepted.

*This doctoral program is funded in the frame of the IPBG scheme of the Luxembourg National Research Fund (FNR). The LIST is committed with equality of opportunities and gender balance.*