The Luxembourg Institute of Science and Technology (LIST) offers a PhD position in a framework of a European FEDER project PULSATEC.

The PhD project will be carried at LIST in collaboration with 4 other laboratories (IJL/Nancy-France, MECS/Saarbrucken-Germany, CRM and ULG/Liège-Belgium). The objective is to study the growth mechanisms of nanocomposite oxide coatings as alumina based thin film by using reactive high-power impulse magnetron sputtering (HIPIMS).

Description

We are looking for a researcher that is expected to strongly contribute to a Research & Development project through a doctoral research activity where the final goal is to provide a new nanocomposite coating with optical and tribomechanical properties associated to a high temperature stability. A new process combining DC and HIPIMS magnetron sputtering will be developed and a part of the work will also concern the identification and the optimization of the deposition parameters that allow tailoring the film microstructure, intrinsic stress and plasmionic properties.

In the first part of the project, the student will participate to the understanding and the optimization of the co-deposition HIPIMS process to generate nanocomposite coatings with a well dispersion of NPs and also, with a control of their size. Additionally, in partnership with the partner IJL, the development of a control process by Optical Emission Spectroscopy of the reactive deposition mode will be implemented. The second part of the project will be more dedicated to the study of coating properties like the optical properties and its resistance at high temperature.

Profile

Education

- Master's degree in Materials Science

Competencies

- Prior research experience in the fields of PVD or CVD coatings will be highly valued
- Demonstrated competencies in materials characterization (SEM, XPS, FTIR, XRD, etc.)
- Be sociable and enjoy teamwork

Language

- Be fluent in English and/or French (spoken and written)