IEMN DOAE
Université Polytechnique HAUTS-DE-FRANCE

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Post-Doc with experience in oxide ceramics and thin films fabrication for MEMS applications

General Presentation

The candidate will be enrolled by Université Polytechnique Hauts de France (UPHF) in collaboration with the CODEX International company. At UPHF, the candidate will take place in the lab IEMN – DOAE (Institute of Electronics Microelectronics – Opto Acousto Electronic department). This laboratory has strong competences on the fields of functional thin films and especially by sputtering deposition. The studied materials will be focused on piezoelectric inorganic materials without lead in bulk form (for target) and in thin films form. These materials in thin film form will be used for MEMS, SAW and BAW acoustic applications Non Destructive Testing, which is another strong competence of the university. The candidate will spend around 50% of the time in the company.

Company: Codex International is a major player in supplying thin film & coating consumables and related equipment. Our company has a presence throughout the value chain and is located close to its main customers (USA, France, and Spain).

• Manufacturer of inorganic material – all types, forms and purities.

• Manufacturer of Si Wafers – all types.

• OEM Partner to supply full systems, spare parts and related instrumentation.

In addition, Codex International supplies a wide range of high quality precision Optic products and Organic Electronic materials.

The project is to work on piezoelectric materials in bulk (ceramic) and thin films (sputtering) form displaying multi-functional properties for a wide range of applications (MEMS, Acoustic transducers and sensors, etc…).

Position description:

You will join as a post-doc a small pluri-disciplinary team with skills in chemistry, material science, physics, acoustics, vacuum science among others totally focused on R&D. You will be in charge to lead the development / characterization / integration of new multi-functional ceramics (for PVD target applications) and thin films materials to address future MEMS applications (thanks to micro/nanotechnology) of new disruptive devices up to pre-commercialisation. You will receive the support of the other team members and you might have to supervise Master or PhD students for some technical tasks.

Job skills required

Profile: You have skills in ceramic manufacturing technologies, growing thin layers of oxides by sputtering. You have some experiences in vacuum technologies, chemical-physical analysis of

materials. You have a certain expertise in electrical or (and) optical or (and) acoustic measurements of materials. Knowledge of MEMS technologies and design.
Ideally, you are also interested in participating in the exploitation of results towards industrialization/commercialization of the developed knowledge/product.

Skills :

- Oxide thin films growth in vacuum techniques (physical deposition: sputtering)
- Ceramics fabrication and in particular the firing step
- Material science and characterization techniques (for physico-chemical evaluations)
- Vacuum science
- Electrical measurements and in particular the evaluation of the piezoelectric performances.
- MEMS field for devices development

Soft skills :

- You are rigorous, organized, motivated in your work and can both work in autonomy or as part of a team.
- You are proactive and a leader.
- You can interface yourself with both academic researchers and industrial product developers.
- Versatile with the capacity to handle both theoretical models and solve laboratory problems you are looking for new ambitious challenges in your field.
- You are resilient and able to stand stress.

Position conditions

You will be located in France in Codex International (99 Chemin de Manerbe - 14100 Saint-Désir) and in the University Polytechnique Hauts de France (UPHF) in Valenciennes (North of France).

Starting date: January – March 2022.

Gross salary: Around 2850 € / depending on qualifications

Priority will be provided to EU citizens. **The PhD must have been defended after september 2019.**

An excellent project to take your first steps in business by associating academic research / applied research and development.

Some interest? Please send your application to Stéphane Séguier, CTO via e-mail (stephane.seguier@codex-international.com), Denis Remiens (Denis.Remiens@uphf.fr), Julien Carlier (Julien.Carlier@uphf.fr), Professors at UPHF, joining your CV, diploma copies, motivation letter and possibly up to 3 support letters from previous position supervisors.