

**DEVELOPMENT OF TUNABLE CAPACITIVE STRUCTURES
BASED ON FERROELECTRIC/PARAELECTRIC THIN FILM MATERIALS
DEPOSITED BY PLD TECHNIQUE (PULSED LASER DEPOSITION)**

Position: Post-doctoral researcher; duration: 12 months; start: at earliest convenience (to be discussed)
Location: Laboratoire SPCTS - UMR CNRS 7315 / Université de Limoges
Centre Européen de la Céramique, 12 rue Atlantis – 87068 LIMOGES, France
Funding: “Labex Σ _Lim” (collaboration between two participating laboratories, *i.e.* SPCTS & Xlim)
Salary: ~2600 € gross / ~2000 € net (per month)

Objectives / Research context

This full-time postdoctoral work will be focused on the integration of new and improved highly-tunable components based on thin films exhibiting ferroelectric/paraelectric (FE/PE) properties. As the FE/PE materials exhibit permittivity changes under an electric field, the exploitation of both their agility and *high-k* value is particularly interesting to further develop reconfigurable millimetre-wave systems in the GHz range and achieve a marketable product (*e.g.* capacitors and antennas), in the field of future requirements of high frequency systems/devices (*e.g.* 5G telecommunications). This post-doctoral position is located in Limoges, France in the frame of the “Labex Σ _Lim” collaboration between two participating laboratories, namely SPCTS / UMR CNRS 7315 & XLIM / UMR CNRS 7252, accessing an outstanding research infrastructure. Both laboratories and their associated platforms, “CARMALIM” and “PLATINOM”, respectively, already have all the necessary tools required for the design, simulation, and deposition processes, with experimental implementation and testing of the proposed reconfigurable capacitors and antennas based on such new materials. The post-doctoral candidate will work as a member of the “Thin Films and Nanostructures” (TFN) group at SPCTS laboratory.

Candidate’s profile / Post-doctoral job

The post-doctoral candidate will bring their personal skills in several areas, ranging from thin film synthesis to structural and physical characterizations of FE/PE materials. The post-doctoral candidate is a physicist or a chemist, with proven experience in materials science, and a background in the research of functional materials, *e.g.* oxides or related compounds. They must also prove experience in the field of thin film synthesis with an emphasis on laser and plasma processing techniques, *i.e.* pulsed laser deposition (PLD) and/or physical vapour deposition / sputtering (PVD). An expertise in the field of surface analysis and/or structural investigations (X-ray diffraction, atomic force microscopy, scanning electron microscopy, spectroscopic-ellipsometry, etc), accompanied by a strong knowledge of the investigation techniques related to electrical properties (dielectric spectroscopy, measuring probes, etc), are extremely recommended. Moreover, knowledge on the subtleties of RF electronic devices (*e.g.* capacitors, antennas, filters, etc) and circuit design are considered a plus. Candidates must be **highly motivated, possess excellent organizational, problem-solving and communication skills** both verbal and written in English, and should have **relevant publications** in the research field of this project.

Contact / Details

For further details, information, requirements, or for submitting your application, please contact:

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