

Field grading CERamic substrate for high voltage Applications

24 month Post-Doctoral position (for European or Swiss citizen)

High energetic efficiency, compactness and high energy density drive the development of future power electronics. For demanding applications, in extreme conditions, systems need operate at high or very high voltage (from few kV to a few decades of kV) and in severe environments. Wide-band gap semiconductors, as SiC, open the path to performances out of reach of current silicon technology. The packaging of these new semiconductor power devices will require the development of new materials with outstanding performance. For demanding applications, ceramic substrates are used as the mechanical support of the semiconducting chips and their metallic interconnections, and perform at the same time electrical insulation and thermal conduction functions within the power module packaging

This project is dedicated to the preparation and optimization of an original insulating ceramic substrate, enabling to push the limits of the materials generally used as substrates in power electronics.

The work will be performed in CIRIMAT and in LAPLACE laboratories specialized in the synthesis of powders, shaping and sintering processes of ceramics, preparation and characterization of materials and high voltage insulating systems.

Project tasks will require the interaction with multiple structures in the local environment to access scientific equipment and mutualized platforms (PNF2, 3DPhi, PRIMES, and the French FERMaT Research Federation). Beside excellent communication skills and task management experience, the candidate should have a background in ceramic powder processing methods, extensive experience in microstructural characterization techniques and a solid basis in electrical properties measurements.

European citizenship or Swiss nationality is strictly required.

The Post-Doctoral position has a duration of 24 months, with a gross salary in the range of 2100 -2400 € gross per month, according to previous experience.

The candidates should address curriculum vitae, motivation letter and two recommendation letters by e-mail. Please add in the subject the project acronym "FILCERA".

Contact:

Lionel LAUDEBAT (Associate Professor)
lionel.laudebat@laplace.univ-tlse.fr