

Post-doctoral Position

Title	Multiphysics modelling and simulation (electromagnetic, thermal and mechanical) for 3D-printing microwave design
Keywords	Multiphysics, microwave filters, thermic, mechanics, 3D printing
Laboratory	Lab-STICC (http://www.lab-sticc.fr) The candidate will be integrated into an internationally-recognized dynamic research group (gathering more than 10 PhD students) focusing on microwave components and systems providing original solutions in various domains such as telecommunications, defense and health. Joining us is also a possibility to have regular contact with industry-related research through the Thales-Lab-STICC joint lab. Facilities include highly specialized equipment spanning from simulations (HFSS, ADS, CST...) to technological realization (SLA and FDM Printers...) and measurement (VNA up to 110GHz).
Subject	This post-doctoral proposal concerns the Rapid IMPACT project funded by the DGA. The main objective of the project is to design microwave devices based on 3D-printing technology. In this context, two sides of multiphysics will be analysed in the project. The first one concerns the system reliability with the classical tests (thermal stress, etc.). The second one, more upstream research, is related to the analysis of thermal and mechanical effects induced by the microwave signal on the devices under study (coupling between electromagnetism, thermic and mechanics). The first part of the work is then dedicated to the reliability tests on a multiphysics simulation software (ANSYS-Multiphysics) and these tests will be compared to measurements. It will allow us to calibrate the software for the second step of the project. In this second part, the key point is the board heating induced by the microwave signal power. Electrical properties of materials can change with heating and size can be modified by thermal expansion. Then, the impact of thermal and mechanical effects on microwave devices based on 3D-printing technologies will be also studied, i.e., power handling capability, change of the frequency response of the devices, etc. Devices will be fabricated by considering several 3D-printing technologies.
Contact person	Rozenn Allanic (mailto:rozenn.allanic@univ-brest.fr) Miguel Sánchez-Soriano (mailto:m.sanchez.soriano@ieee.org) (Univ. of Alicante)
Candidate Profile	- PhD holder (experience in multiphysics for electronic device reliability and microwave devices will be highly appreciated) - European Union citizenship
Work contract	Employer: Université de Bretagne Occidentale. (http://www.univ-brest.fr)
Situation	Université de Bretagne Occidentale, in Brest (France). Possibility to perform a research stay during the project at the University of Alicante, Spain.
Duration	1 or 2 years
Starting date	January 2021 or sooner (to be discussed)

Monthly salary 2546€ (gross)