

Feasibility Study of a New Microwave Sensor

Applications of microwaves for NDE (Non-Destructive Evaluation) and NDT (Non-Destructive Testing) are growing very fast. Microwaves can penetrate deep inside many dielectric (electrical insulating) materials depending of the working frequency band and losses. Therefore, Microwave NDT and NDE have great potentialities for determining dielectric properties or detecting defects inside various dielectric materials. Microwave sensors offer many advantages over traditional sensors such as rapid measurements, non-destructive sensing, precision, and can be fully automated.

A new microwave sensor is actually investigated, in collaboration with Lincoln Agritech Ltd., New Zealand, to achieve high sensitive detection. The sensitivity must be investigated versus dielectric properties of the object under test and working frequency.

The subject of the internship concerns numerical modeling and experiments on objects of potential interest, comparison between numerical simulations and experiments.

In the first part, the student will have to use commercial electromagnetic simulation software available in the LEAT (Ansoft-HFSS, CST) for computing the scattering pattern of dielectric objects illuminated with an antenna. In a second part, the student will carry out measurements and compare the simulations with measurements.

Tutors: Ch. Pichot, C. Migliaccio, J. Lanteri

Contact: christian.pichot@unice.fr, claire.migliaccio@unice.fr, jerome.lanteri@unice.fr

Funding: Lincoln Agritech LVLX1505

Language skills: good command/good working knowledge in English.

Motivation letter in English.