



**MMAMA Project Online Workshop
28/10/2020**

Electrical Material Parameters and Impedance Measurement Techniques in the Project MMAMA

Chairs

Dr. Johannes Hoffmann and **Dr. Toai Le Quang**, METAS, Switzerland

Description

Manufacturing industry is putting more and more complicated materials and material systems onto the market. These are new semiconductor materials, composites, organic semiconductors, and many other ones. Knowing the electromagnetic parameters of these materials are the basis for product development. The effective extracted material parameters are used in microwave simulations and design but also, the spatially resolved material measurements are required to progress the material science. This workshop will show recent developments in highly precise material measurements for bulk materials and measurements with spatial resolution down to 20nm.

Some of the talks have been recorded during the MMAMA Mikon workshop 2020 others have been recorded especially for this workshop.

List of talks

1. **Presentation of the MMAMA project** (Dr Olivier Douheret, Materia Nova, Prof. Kamel Haddadi, IEMN)
2. **Standard operating procedures for Scanning Microwave Microscopy** (Dr. Johannes Hoffmann, Dr Toai Le Quang, METAS)
3. **Nanoscale Hybrid Metrology Techniques and Data Fusion** (Prof. Kamel Haddadi, Prof. Didier Theron, IEMN)
4. **Physical Modeling and Simulation of Microwave Microscopy of Semiconductor Materials at High Frequencies** (Arif Gungor, ETHZ)
5. **3D characterization of atomically thin semiconductors by broadband electrical Scanning Probe Microscopy** (Dr. Georg Gramse, Keysight Technologies)
6. **Impedance Spectroscopy: fast and versatile characterization tool for multiscale evaluation of organic photovoltaic materials and process** (Dr. David Moerman, Dr. Olivier Douheret, Materia Nova)
7. **Material characterization systems** (Prof. Wojciech Gwarek, QWED)
8. **Fast and Calibrated RF Measurements for Open-Ended Coaxial Probes 2D Dielectric Imaging Systems and Microwave Imaging Systems** (Mykolas Ragulskis, Keysight)
9. **Broad Range Spectral Characterization Methods from Hz to GHz New Experimental Set-Up for Measuring Electrical Properties** (Olivier Douheret, MateriaNova)
10. **Enhancements to Dielectric Resonator Material Measurement Techniques Based on Electromagnetic Modelling and Signal Processing** (Malgorzata Celuch, QWED)
11. **Measurement of Dielectrics from 20 to 110 GHz with a Fabry-Perot Open Resonator** (Bartlomiej Salski, IRE)



12. **Measurement Systems for Lossless and Lossy Materials up to Sub-THz Frequencies** (Prof. Yevhen Yashchyshyn, IRE)
13. **Modelling of material characterization systems** (Malgozata Celuch, QWED)