

Special Issue

Microwave Techniques for Spectroscopy and Imaging Applications

Message from the Guest Editors

Microwaves have been utilized for decades, mainly in systems for telecommunication applications. On the other hand, the penetration of microwaves, especially at frequencies not exceeding the C-Band, promoted additional fields of interest, encompassing material science, cultural heritage and biological imaging. Near field measurement techniques have been developed for local characterization of dielectric and magnetic properties of materials. Actually, spectroscopy and imaging of small areas with purposely shaped tips is now possible to detect sub-surface buried metallization and to observe dielectric inclusions by processing microwave reflected signals. So far, general concepts can be shared among different fields, but actual solutions and physical modelling are quite different, comparing micro- and macro-setups necessary for the characterization. In this Special Issue, the basic concepts of spectroscopy and imaging based on microwave measurements will be discussed, together with the inverted reconstruction algorithms for post-processing raw data to generate the image.

Guest Editors

Dr. Romolo Marcelli

CNR-IMM Roma, Via del Fosso del Cavaliere 100, 00133 Roma, Italy

Dr. Emanuela Proietti

CNR-IMM Roma, Via del Fosso del Cavaliere 100, 00133 Roma, Italy

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Sensors
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
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Editor-in-Chief

Prof. Dr. Vittorio M. N. Passaro

Dipartimento di Ingegneria Elettrica e dell'Informazione (Department of Electrical and Information Engineering), Politecnico di Bari, Via Edoardo Orabona n. 4, 70125 Bari, Italy

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