# SUNDAY 08:30 – 17:50

## Additive Manufacturing for Microwave Components and Systems

**WS04**
EuMC

Chair: Tinus Stander[1]
Co-Chair: Cristiano Tomassoni[2]
[1]University of Pretoria, [2]University of Perugia

**Room: Auditorium**

Additive manufacturing has firmly established itself as a valuable tool for rapid prototyping and cost-effective low-volume production of RF, microwave and mm-wave devices and systems. While powder bed fusion techniques remain important in direct printing of metal components, metallization of 3D printed ceramics, photopolymers and thermoplastics have created new opportunities with significant cost and weight advantages. In particular, the recent availability of low loss dielectric materials have enables the use of 3D printed materials as functional components in microwave designs, rather than merely metallized structural components. Low-loss, low-cost metallization and accurate characterization of these materials are key to their success. This includes the use of printed conductive inks, creating all-additive approaches for selectively metallized parts.

This workshop brings together additive manufacturing experts from academia and industry to showcase new design and manufacturing techniques, as well as equipment and materials, for additively manufactured microwave components. The workshop also highlights application of these designs in aerospace, IoT, 5G, radio astronomy and industrial radars.

**PROGRAMME**

### Dielectric-filled 3D printed waveguides and waveguide insert filters
Tinus Stander[1]
[1]University of Pretoria

### Recent advances in additive manufacturing for radar applications
Carlos Sempere Chaves[1]
[1]Fraunhofer FHR

### 3D printed ceramic filters for space applications
Cristiano Tomassoni[1]
[1]University of Perugia

### Characterization of printed dielectric materials in the millimeter wave range
Paola Escobari Vargas[1]
[1]Eindhoven University of Technology

### Zero-Power Additively Manufactured FHE-Enabled RF Ultrabroadband Modules for IoT, Precision Agriculture, Industry 4.0 and Digital Twins Applications: the scaleup to 5G+ and 150GHz+
Manos M. Tentzeris[1]
[1]Georgia Institute of Technology

### Monolithically-Integrated 3D Printed RF Filters: New Topologies, Miniaturization & Performance Improvement Techniques
Dimitra Psychogiou[1]
[1]University College Cork

### ATARU Transforming DLP Tech: New 3D Print Resin with Outstanding Dielectric & Thermo-Mechanical Properties
Stefan Schlisske[1]
[1]NanoDimension

### On the design of filters and passives with metal 3D printing technology
Stefano Sirci[1]
[1]SwissTo12

### New approaches to metallized resin-printed filters
Benjamin Potelon[1]
[1]Lab-STICC, IMT-Atlantique, Brest, France

### New design paradigms using low-loss stereolithographic printing resins
Stefano Dada[1]
[1]Rogers Corporation

### mm-Wave waveguide devices through plating of SLA-printed parts
Christoph Birkenhauer[1]
[1]Golden Devices