

# Workshop on Novel Antenna Designs and Manufacturing Challenges for 6G Communications: The Role of EM Materials

# 6G

## Call for Papers

Recently, the research community and the standardization bodies have started to discuss what the Sixth-Generation (6G) of wireless communications should be. It is envisioned that 6G mobile communications revolution the communication sector by proposing novel communication paradigms, and novel uses to connect not only people or devices -as in 5G- but providing the network with intelligence able to identify, localize or sense their environment.

Novel antenna designs should be envisioned for 6G systems, as they should operate at higher frequencies and different environments. Besides, they should interact with a great diversity of materials and should be low-cost and sustainable for massive production. In this line, novel antennas using low-cost materials and advanced manufacturing techniques have been investigated in the last years, and some interesting solutions have been recently proposed. Metasurfaces, intelligent reflective surfaces (IRS) and smart lenses can be found as promising candidates for the next generation systems at the 6G radio interface. Additive manufacturing techniques like inkjet-printing or 3D printing in novel materials, together with advanced technologies for wave guiding in 6G have recently attracted increased interest for the new systems. As the systems increase their operating frequency, several challenges arise from the fabrication and the antenna design. In this context, the availability of materials whose complex permittivity can be engineered for an optimal design of 6G devices and applications pays also an important role.

The capability of produce materials with custom permittivity values at Gigahertz frequencies and with different mechanical properties would open the door to “on demand” materials that would allow to design novel and disruptive kinds of antennas and devices for the different use cases and applications. This workshop aims at addressing all the topics involved in the optimal design and manufacturing of novel antennas for future 6G systems, especially those targeting future GHz and THz bands. Special focus on advanced manufacturing techniques, novel materials, artificial materials and smart antennas will be addressed in this workshop. The topics of interest include, but are not limited to:

- Advances in Additive Manufacturing/3D Printing
- Novel Materials and Metamaterial Structures
- Intelligent Surfaces to Tailor Radio Propagation
- Artificial materials
- Metasurfaces and Smart lenses
- Antenna and Beamforming Technology for 6G
- Antenna Systems for Wireless Power Transmission and Harvesting
- Advanced antennas for IoT applications
- Wearable, sub mm-wave and THz antennas for 6G
- Dielectric characterization of antenna materials at GHz and THz bands
- Flexible materials for body-centric antennas
- Methodologies for dielectric characterization of materials at GHz and THz bands
- Passive/active/adaptive/flexible antennas
- Propagation analysis for 6G antenna systems
- Applications

Prospective authors are encouraged to submit technical papers of their previously unpublished work. Accepted workshop papers will be part of the Conference Proceedings and will be uploaded to IEEE Xplore. Submission link: <https://edas.info/newPaper.php?c=29743>

## Key Dates

<b>Paper submission:</b>	<b>June 3, 2022</b>
<b>Acceptance notification:</b>	<b>June 24, 2022</b>
<b>Final paper due:</b>	<b>July 14, 2022</b>

## Organizers

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## More Information:

<https://www.mcg.upv.es/en/wnovel6gatenna/> and <https://pimrc2022.ieee-pimrc.org/>