

# Guest Editorial

## Special Issue towards EuCAP 2012

### “Emerging Materials, Methods, and Technologies in Antenna & Propagation”

Dear readers,

It is our pleasure to introduce this special June 2011 issue of the Radioengineering Journal promoting future edition of the largest European event in the area of research, technology and application of antenna and propagation - European Conference on Antennas and Propagation EuCAP 2012 which will be held in Prague during spring week March 26-30, 2012.

We believe that our common work will lead to a top-quality conference, not only from its academic and scientific value, but also from a point of view of its attraction for a commercial sphere and financial success. Last but not least we do believe that the Prague conference will enable to arrange new professional as well as personal contacts and the participants will have only good memories of the event.

This special issue is composed of six extended papers originally published in Proceedings of EuCAP 2010. The common subject matter is the focus on emerging methods and technologies in antennas and propagation. Another selection criterion has been interdisciplinary of the presented research so that the research would preferably be also outside the scope of A&P topic. As a result we may provide you following themes: biomedical microwave and THz imaging, RF and THz identification technologies, statistical and deterministic modeling of electromagnetic wave propagation in indoor environment.

In the first paper, the authors *Marta Guardiola, Lluís Jofre, Santiago Capdevila, Sebastian Blanch* and *Jordi Romeu* assessed of potentiality of 3D UWB magnitude-combined tomographic imaging for biomedical application especially for cancer detection. For validation, simplified breast and brain models have been properly reconstructed even in particular case where the contrast between the breast tissue and the tumor is low.

The second paper by *Juan Lizarraga* and *Carlos Del Rio* deals with the resolution capabilities of terahertz cameras. The authors proposed a method that reduces significantly the number of detectors needed for achieving certain resolution by means of diffraction which is used as a way of achieving spatial diversity and as an anti-aliasing low pass filter.

The next paper by *Etienne Perret, Maher Hamdi, Arnaud Vena, Frederic Garet, Maxime Bernier, Lionel Duvillaret*, and *Smail Tedjini* is focused on planar RF and

volumetric THz chipless tags. The authors demonstrate a coding capacity of 3.3 bit/cm<sup>2</sup> for RFID multiresonant tag and a potential of 10 bits with the help of photonic band gap structure in THz domain.

The paper by *Antonis G. Dimitriou, Aggelos Bletsas, Anastasis C. Polycarpou*, and *John N. Sahalos* deals with the improvement of identification reliability of a UHF RFID system inside a room. They develop ray-tracing propagation model that includes multipath in 3D space to carefully characterize interference effects. It was shown that tag's polarization diversity can greatly enhance the identification reliability of the system.

The next paper by *Zhihua Lai, Guillaume De La Roche, Nik Bessis, Pierre Kuonen, Gordon Clapworthy, Dibin Zhou*, and *Jie Zhang* presents 2.5 and 3D intelligent ray launching algorithm for indoor scenarios. The model offers accuracy similar to existing deterministic models and faster compared to standard ray tracing methods. The algorithm is validated against two other reference models.

The last paper by *Alexander Maltsev, Roman Maslennikov, Artyom Lomayev, Alexey Sevastyanov*, and *Alexey Khoryaev* proposes a methodology of statistical channel modeling for 60 GHz WLAN systems. 3D channel model for the office conference room environment to accurately predict the space-time channel characteristics has been developed and accepted by the IEEE 802.11ad standardization committee for 60 GHz WLANs.

We trust that this special issue will provide pleasant and inspiring summertime reading for you and hope to see you at EuCAP 2012 conference if not earlier.

Sincerely yours,

**Juan R. Mosig**  
EurAAP President  
EFPL Switzerland

**Miloš Mazánek**  
EuCAP 2012 General Chair  
CTU in Prague, Czech Rep.

guest editors of this issue with the support of

**Milan Polívka**  
CTU in Prague, Czech Rep.

associate editor of the Radioengineering Journal.

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