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New advances in antennas for micro- and millimeter wave communications based on emerging materials and reconfigurable structures

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As the need for higher connectivity is pushing to open up higher frequency bands for communications, entering the micro and millimeter wave bands (>10 GHz), we are facing the need to develop new antennas to cope with two main requirements: low cost and reconfigurability. Low-cost is a must as the band from 28 to 40 GHz is seriously considered to bridge end mobile users, and this implies large deployments, inherently cost sensitive. Reconfigurability is a must as once deployed, such systems need to be able to adjust to the peculiarities of their environment and traffic needs. Horn antennas based on metal drilling and milling are technology and cost intensive, while not allowing reconfigurability once fabricated. In this paper, we will review our recent work in using advanced materials for antenna reconfigurability and fabrication. The results enable advanced functionalities such as frequency switching and beam forming.

Biography

J J Vegas Olmos received the BSc and the MSc in Telecommunications and Electronic Engineering, respectively, in 2001 and 2003. He obtained the PhD degree from the Eindhoven University of Technology, The Netherlands, in 2006. He also holds a MA in East Asian Studies, a BEc in Business Administration, and an MBA. He was a Research Fellow at Osaka University, Japan, from 2006 to 2008, and a Research Associate at the Central Research Laboratory, Hitachi Ltd. Since 2011, he is with the Technical University of Denmark, where he is an Associate Professor at the Department of Photonics Engineering.

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