# Chip-Integrated RF Identification and Security

Talk by Dr. Mohamed Kheir, IMS Connector Systems Group,
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Radio Frequency Identification (RFID) systems have been receiving a great attention in the latest few decades due to their vital role in our everyday life. RFIDs are the backbone of modern Internet-of-Things (IoT) and Near-Field Communication (NFC) systems. However, such systems are being exposed to serious security threats especially when conveying senstive or confedential information. RF chip security techniques, that are based on physical unclonable functions (PUFs), can offer an effective solution to such attacks. A new implementation of chip-integrated identification and security will be presented in this talk. This approach is based on near-field electromagnetic scattering with nanostructured materials intermixed within the chip package during the fabrication process. The generated RF fingerprints can be utilized as authentication keys for chip protection against potential counterfeiting attempts.
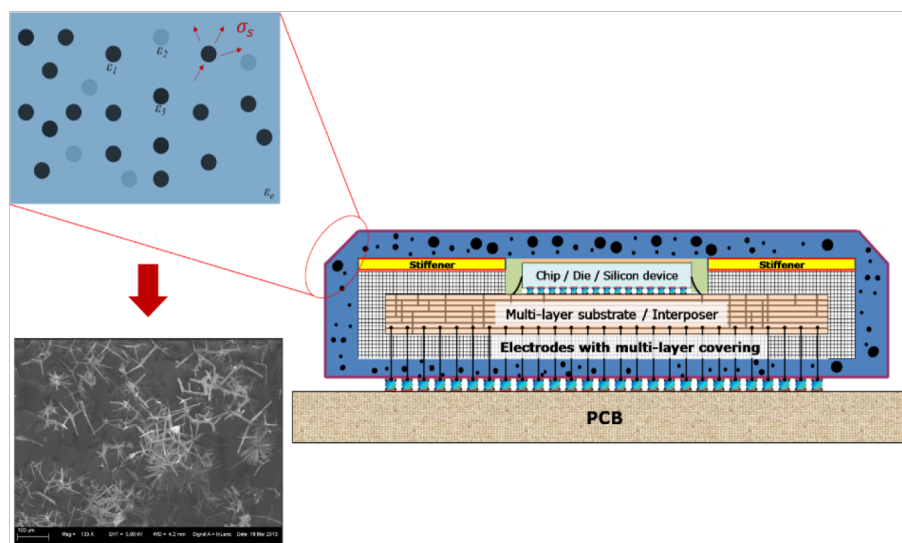
Mohamed Kheir was born in Cairo, Egypt, in 1977. He received his MSc degree in Communications Technology from University of Ulm, Ulm, Germany in 2005, and the PhD degree (with honors) in Information Engineering and Technology from the German University in Cairo, Egypt, in collaboration with Magdeburg University, Germany, in 2011. From 2012 till 2015, he was a Lecturer at the Chair of Microwave Engineering, University of Kiel, Germany, where he was involved in several research projects and teaching duties. Since October 2015 and till now, he has been a Senior RF-Development Engineer with IMS Connector Systems Group, Germany, where he is responsible for the design and development of high-speed and multi-channel connectors for automotive and wireless applications. His research interests include microwave/mmWave integrated circuits, RF Identification and Security and UWB Technology.

Dr. Kheir serves as an Associate Editor at IEEE Access and IEEE Internet of Things Journal. He is also a reviewer for multiple IEEE/IET Journals and a TPC-member for many conferences. Dr. Kheir is the recipient of several prestigious awards and honors from different conferences and organizations worldwide. He has been an IEEE Senior Member since 2017.