

# Technical Trainings, Webinars and Academic Lectures



## Reference Solution workshop

# The increasing relevance of materials science for the power semiconductor industry

16 February 2023, 15:30-17:00 pm

by Peter Imrich

From charging a cell phone to powering large data centers all over the world, energy conversion in offshore wind turbines, or in automotive applications, modern power semiconductors are a key technology.

To guarantee that the devices work efficiently and reliably in such diverse applications in often harsh environments, they consist of a complex combination of thin films surrounding the active semiconductor material. Frequently, metallic, polymeric and ceramic thin films of several nm to a few  $\mu\text{m}$  thickness can be found in direct contact to each other.

The properties of these materials and their integration into a product pose multifold challenges both in manufacturing and in application. In addition, the often high temperatures and harsh environments during application require sophisticated corrosion protection strategies.

To address these challenges a deep understanding of the materials and their interaction is mandatory. This is why a broad range of materials characterization, testing and modelling techniques, ranging from high-end TEM and micromechanical characterization to ab-initio simulation and advanced FE modelling are applied. Using selected examples, the role of materials science to address these topics in power semiconductor industry will be presented.



**Dr. Peter Imrich** received his PhD in Materials Science at the Montanuniversität Leoben in Austria with a focus on micro- and nanomechanical materials behavior. He joined Infineon in 2015 where he worked as a metallization expert focusing on all Infineon frontend technologies as well as on the interaction to backend processing. Since 2021 he is leading the materials science & simulation group at KAI Competence Centre for Automotive and Industrial Electronics in Villach, Austria.

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