



Dr. Mohamed Taha Abdelkader
University of Warwick-UK

BIOGRAPHY

Dr Mohamed is a Principal engineer (Associate Professor) at the school of engineering, University of Warwick. He joined the Power Electronics Applications and Technology in Energy Research (PEATR) group to lead the research team in the @FutureBeV project which is led by a well-known OEM (BMW). Before Joining the PEATER group, he was a former lead engineer at Jaguar Landrover (JLR) where he lead the team to develop the drive motor and Inverter for the first Mild Hybrid Electric Vehicle (MHEV) for JLR in 2019. He has wide academic and industry experience where he has taken different positions at Warwick Manufacturing Group-UK, Ghent University-Belgium, Schneider electric-Egypt, and Cairo University-Egypt.

SiC Power Devices for Automotive Applications-Challenges and Opportunities

Silicon Carbide (SiC) power devices are driving the next revolution for power electronics applications. Automotive application is one of the most evolved applications by the SiC capabilities. SiC devices offer many advantages, including high dielectric strength which is the enabler of high voltage applications, and high thermal conductivity, which is the promoter for better thermal management, hence, high power density. By retaining a low “turn-on” resistance and switching fast, SiC devices can offer low conduction and switching losses. On the other hand, SiC devices still face many challenges. Cost is one of these challenges, nevertheless, with mass production and bigger wafer size, the cost started to reduce significantly and is expected to get reduced more. The other big question for SiC devices is reliability where the community is expecting a high reliable group of devices for all these applications. In this talk, I will discuss the challenges and opportunities for using SiC Power devices in automotive applications with a bit of focus on the reliability testing that we are developing in the reliability and robustness lab at the University of Warwick.