Special Issue

Power Electronics for Transportation Electrification: Toward Sustainable Mobility

Message from the Guest Editors

Power electronics has emerged as an enabling technology in the deployment of next-generation sustainable systems including transportation systems, motor drives, robotics, biomedical applications, renewable energies, smart grids and data centers. The sustainable transportation segment of power electronics requires novel power conversion systems to meet stringent requirements in terms of cost, weight, volume, power quality and reliability. Moreover, to realize the advantages of high-frequency WBG power electronics in transportation electrification in practice, research and development activities in different areas need to be carried out to specifically address the open-end design problems. Some of the critical areas are (a) innovative power converter topologies, (b) novel design approach for high-frequency magnetics design with minimized parasitics, (c) high-density electromagnetic interference (EMI) filter design methodologies, (d) magnetic coil design and optimization for wireless power transfer, (e) performance evaluation of WBG devices in high-temperature (>200oC) power conversion and (f) high-performance time-optimal control schemes for power converters.

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