

Call for Papers

IEEE Journal of Emerging and Selected Topics in Power Electronics

Special Issue on Modeling, Design and Application of Next-Generation Power Components

Scheduled Publication Time: October 2019

Power electronics, characterized by impressive technology advancement over the last two decades, has become a more complex and multidisciplinary research field. Power semiconductor devices, passive components, and power conversion systems are undergoing significant performance improvement, but meanwhile facing challenges in efficiency, flexibility and reliability. While new wide-bandgap semiconductor devices are now establishing new efficiency and switching speed standards in the market, silicon power devices keep improving in terms of both manufacturing technology, package materials and design. Both call for new modeling methods and design efforts at device, component, and system levels, in order to predict accurately device characteristics, losses, EMI, etc., allowing design of power conversion systems with required margins. Furthermore, there is a lack of understanding of new phenomena or failure mechanisms associated with the new component technologies. From a system point of view, condition monitoring for high reliability is nowadays a must-have part in the overall application development process, demanding accurate and trustable models.

In this highly dynamic scenario, this special issue intends to foster and collect the latest research in modeling, prediction and design of advanced power component technologies, including advanced WBG and silicon power devices, advanced passive components (inductors, capacitors, composite filters), device/component modeling at various levels, advanced assembly and packaging technology, normal/abnormal operating conditions, testing and assessment methods, thermal and electro-thermal modelling towards effective and reliable power conversion systems. Prospective authors are invited to submit original contributions and survey papers in these areas. Potential topics include, but are not limited to:

- Circuit level modeling of power semiconductor devices (WBG and silicon discretes and modules)
- Physics-based FEM or TCAD simulation of power semiconductor devices
- Modeling and simulation of passives components (capacitors, batteries, supercapacitors, inductors, transformers, fuses)
- Modeling and analysis of device/component failure mechanisms
- Multi-physics modeling of power components (thermal, parasitics, multi-domain simulations, etc.)
- Lifetime prediction and reliability modeling and assessment of power electronic components and systems
- Advanced driving/modulation/modeling methods for emerging power devices and corresponding applications
- Experimental validation of theoretical models

All manuscripts must be submitted through Manuscript Central at <http://mc.manuscriptcentral.com/jestpe-ieee>. Submissions must be clearly marked "Special Issue on Modeling, Design and Application of Next-Generation Power Components" on the cover page. When uploading your paper, please select your manuscript type "Special Issue". Refer to: <https://www.ieee-pels.org/> for general information about electronic submission through Manuscript Central. Manuscripts submitted for the special issue will be reviewed separately and will be handled by the guest editorial board noted below.

Deadline for Submission of Manuscript: December 31, 2018

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Timeline

- June 30, 2018 Call for Papers opening
- December 31, 2018 Manuscript Submission
- June 30, 2019 Acceptance Notification
- July 31, 2019 Manuscripts to IEEE
- October 2019 Special Issue published