



On-Chip Electron Emission and Related Devices

Guest Editors:

Dr. Xianlong Wei

School of Electronics, Peking
University, Beijing 100871, China

Dr. Yuwei Wang

College of Electrical and
Information Engineering, Hunan
University, Changsha 410082,
China

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Message from the Guest Editors

Dear Colleagues,

It is well known that most vacuum electronic devices based on free electron beam (EB) have given way to solid state devices because of the disadvantages of bulky size, high cost, difficulty in integration, etc. However, there are still lots of irreplaceable electron beam-based devices and instruments nowadays, including microwave tubes, X-ray tubes, electron guns, etc., even though they still encounter the above-mentioned disadvantages. Benefit from the development in advanced nanomaterials and microfabrication technologies in recent years, it becomes possible to scale down and integrate these electron beam-based devices and instruments on a chip, which makes them free of above-mentioned disadvantages and exhibit boosted performances, and breathes new life into this traditional area. For example, vacuum transistors, a kind of vacuum triodes scaled down on a chip, have rekindled many researchers' interest in old-fashioned devices because they can combine the respective advantages of traditional vacuum triodes and solid-state transistors.





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Editor-in-Chief

Prof. Dr. Ai-Qun Liu

1. Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong, China
2. School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore 639798, Singapore

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Micromachines Editorial Office
MDPI, Grosspeteranlage 5
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