



Advances in Semiconductor Nanostructures for Nanoelectronics and Nanophotonics

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Message from the Guest Editor

Nanophotonics and Nanoelectronics refer to nanometer feature size structures commensurate with the wavelength of light or electrons and offer unique advantages when they are being used to manage light and electrons movement and localisation. The materials that are used to realise such structures tend to be metals and dielectrics (including semiconductors and insulators). Electronic nanostructures include 2D materials, nanowires, quantum-confined heterostructures and reveal fascinating properties from traditional quantum transport to correlated effects, including spintronics, and Majorana Fermions. The design of nanostructures for quantum information is a burgeoning field that looks to control over electrons degrees of freedom by local and global interactions. In many of the cases of both photonic and electronic artificial nanostructures, surfaces and interfaces and their control play an important role in determining behaviour.

Keywords

- spintronic
- surface plasmon
- photonic nanowires
- photonic cavities
- quantum confined nanostructures
- majorana Fermions
- transport in semiconductor nanowires
- 2D materials





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