

Special Issue on  
**Photonic and Optoelectronic Devices Based on the  
Integration of Two-Dimensional Materials**

# CALL FOR PAPERS

The emerging field of 2D materials provides the optical community with many exciting new opportunities for exploration of both photonic and optoelectronic devices. Thanks to the resonance given by graphene that has shown unique optical and electronic properties, 2D layered materials have been extensively investigated for a large range of applications including saturable absorbers for ultrafast laser, photodetectors, modulators, sensors, and photovoltaic cells. Graphene interacts with light from microwave to ultraviolet making it a good candidate for a wide range of applications. In addition its transparency and high specific area make it an intriguing candidate for solar cell and energy storage applications. On the other hand, its semimetallic behaviour compromises the realization of efficient graphene-based light sources. In contrast, new emerging 2D materials such as molybdenum disulphide ( $\text{MoS}_2$ ) and transition metal dichalcogenides (TMDCs) and tungsten diselenide ( $\text{WSe}_2$ ), being direct-band gap semiconductors, are characterized by light-emitting properties also at near-infrared wavelengths. Hexagonal boron nitride (hBN) is another important type of 2D material whose large band gap gives it excellent dielectric characteristic and it can be integrated with other 2D materials in order to enhance their properties. Also graphene oxide (GO) is a dielectric material that has recently attracted the interest of researchers thanks to both its biocompatibility and its luminescence property.

The success of 2D materials in photonics and optoelectronics is also due to both the possibility of tuning their optoelectronic properties by various approaches, that is, doping strain and electric field, and the possibilities for combining them with different three-dimensional substrates in order to realize various photonic and optoelectronics devices able to cover a wide spectral range of applications.

We would like to cordially invite authors to contribute original research articles as well as review articles that will illustrate recent advances in the field of photonic and optoelectronic devices based on the integration of new emerging 2D materials.

Potential topics include but are not limited to the following:

- ▶ Light sources: diodes and laser
- ▶ Detectors
- ▶ Modulators
- ▶ Photovoltaic cells
- ▶ Devices based on nonlinear phenomena
- ▶ Imaging
- ▶ Plasmonic devices
- ▶ Energy storage
- ▶ Silicon-based devices
- ▶ Sensors and biosensors
- ▶ Modelling

Authors can submit their manuscripts through the Manuscript Tracking System at <http://mts.hindawi.com/submit/journals/ijp/podb/>.

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**Manuscript Due**

Friday, 4 November 2016

**First Round of Reviews**

Friday, 27 January 2017

**Publication Date**

Friday, 24 March 2017