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**Abstract**

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## Graphene Nanophotonics

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*(Invited Paper)*

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**Abstract:** Graphene, which is a single layer of carbon atoms assembled in a honeycomb lattice, has recently attracted significant attention, primarily due to its extraordinary electronic properties. In fact, its photonic properties are not less exciting. Graphene interacts with light strongly from ultraviolet to far infrared, and such interaction is tunable by electric field. Moreover, although graphene itself is gapless, a direct, tunable bandgap can be created by breaking its intrinsic crystallographic symmetry. These unique properties make graphene a promising candidate for various light detection, manipulation, and generation applications in an ultra-wide operational wavelength range. In this paper, we first discuss a few possible photonic applications based on the exceptional photonic properties of graphene, followed by detailed presentation on graphene photodetectors. Finally, two major future directions on graphene nanophotonic research will be covered.

**Index Terms:** Graphene, photodetectors, optical modulators, nanophotonics.

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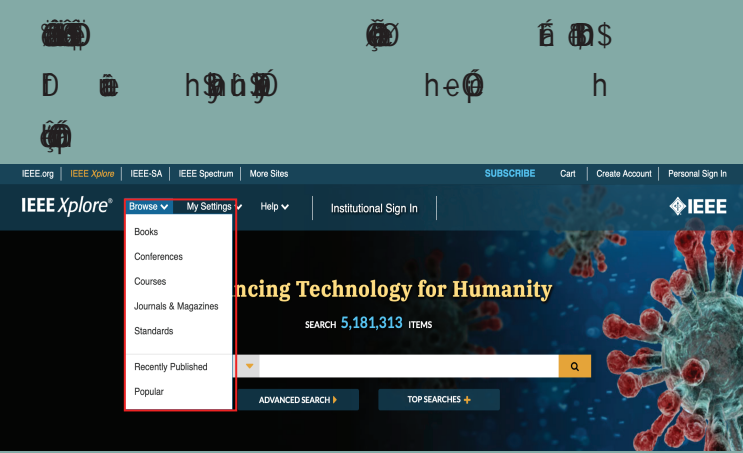


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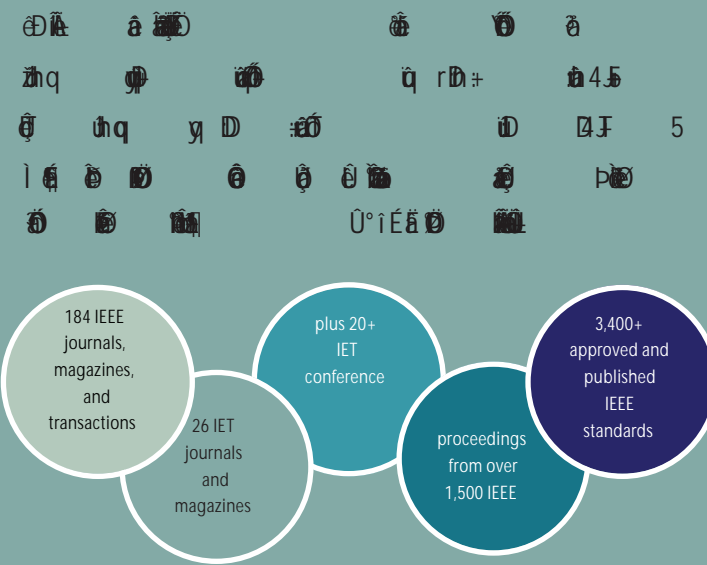
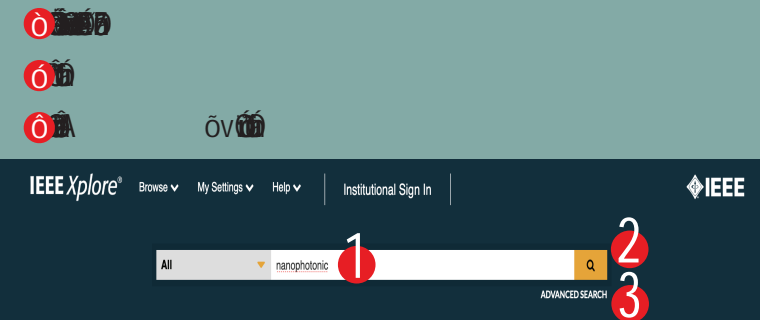


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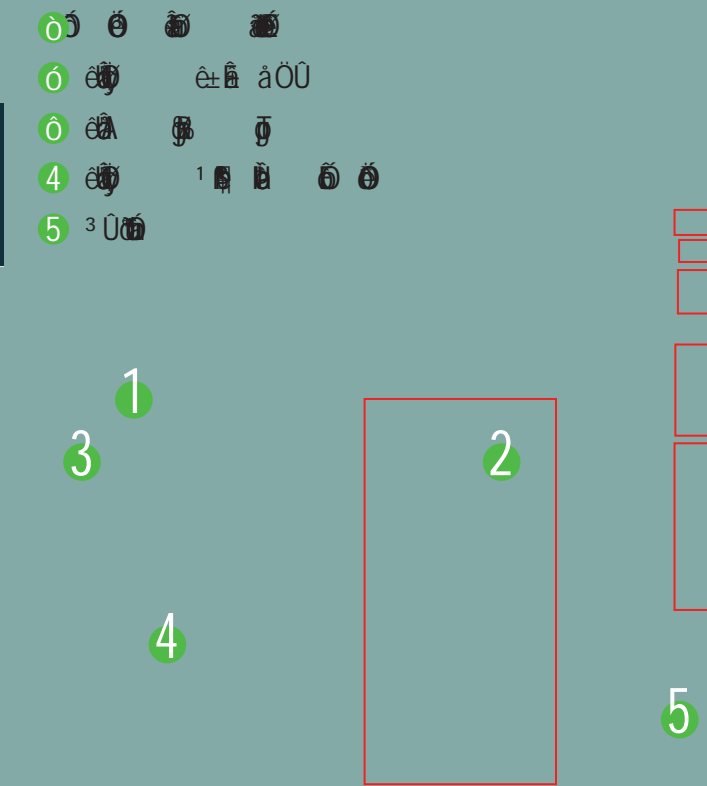
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