

## Electronic and optoelectronic properties of black phosphorous

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### Abstract

The optoelectronic and photonic devices based on two-dimensional (2D) materials are of great importance in the technological development of efficient devices for various applications including ultrafast computing, imaging, environmental monitoring, security systems, optical communication, and health care, etc., is vitally important. After the invention of graphene, the past decade witnessed a rapid development and amelioration of several 2D materials. These newly discovered materials have the capability to emit and or detect the electromagnetic radiation from visible to radio frequency waves which is an essential need for daily life applications. Herein, we present the enormous capabilities of the most recent rediscovered 2D material named black phosphorous (BP). It offers a solution for several technological limitations that appears in conventional 2D materials such as transition metal dichalcogenides/oxides etc. In the present work, we have demonstrated the electronic and optoelectronic properties of BP via realizing field effect transistors.