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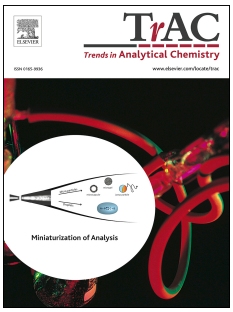

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Monoelemental 2D Materials-based Field Effect Transistors for Sensing and Biosensing: Phosphorene, Antimonene, Arsenene, Silicene, and Germanene go beyond Graphene

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Abstract

Graphene has been of immense interest for its interesting electronic properties, such as being a zero-band gap semiconductor. However, to be able to usefully employ graphene for electronics and electronic-transduction system sensors and biosensors, one needs to open this band gap. This proofs to be challenging on reproducible, scalable way. There are other 2D monoelemental materials that exhibit useful band gap and which can be used for field effect transistor- (FET-) based sensing and biosensing. Here we discuss trends in the development of FET-based sensors utilizing 2D phosphorene, arsenene, antimonene, silicene, and germanene.