Electronic Devices based on 2D Materials – Opportunities and Open Challenges

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Graphene and two-dimensional (2D) materials have been researched intensely over the past 15 years, and there is continued substantial investment in 2D material research and development. However, although physicists, chemists, material scientists and engineers continue to report new highlights on a daily basis, there are no end-customer microelectronics products on the market today. The main reason is that the process technology to manufacture 2D electronics is not sufficiently mature, which limits the possibility of realizing the promise of outstanding performance in electronics, optoelectronics or sensing. In this talk, I will introduce several applications, where 2D materials clearly could make a difference, such as photodetectors [1–3] and sensors [4–7]. I will further discuss major bottlenecks towards integration of graphene and 2D materials into semiconductor processing lines [8].

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