

The potential of graphene in wireless communication systems

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Wireless communication systems are the essential part for connecting end-users to the internet. With the Internet-of-Things the importance of wireless communication systems will increase drastically, coming along with demands on higher bandwidth, lower power consumption, cheaper prices and also new forms enabling different integration schemes. In order to meet all these challenges in the future new concepts and also new materials need to be integrated in corresponding systems, which offer novel and also disruptive solutions. Graphene has been discussed for more than a decade as promising material for future RF electronics, essentially because of its high carrier mobility, enabling devices to operate at highest speeds. In addition the fabrication process of graphene based devices is compatible to thin-film processing and flexible substrates, enabling the hetero-integration of different functionalities. In this talk I will discuss the latest activities in the field of graphene-based wireless communication. Here, a special focus will be laid on the assessment of the performance of single graphene devices and integrated circuits with respect to conventional semiconductors. An outline on possible directions for entering end-user application will be given.

Figures

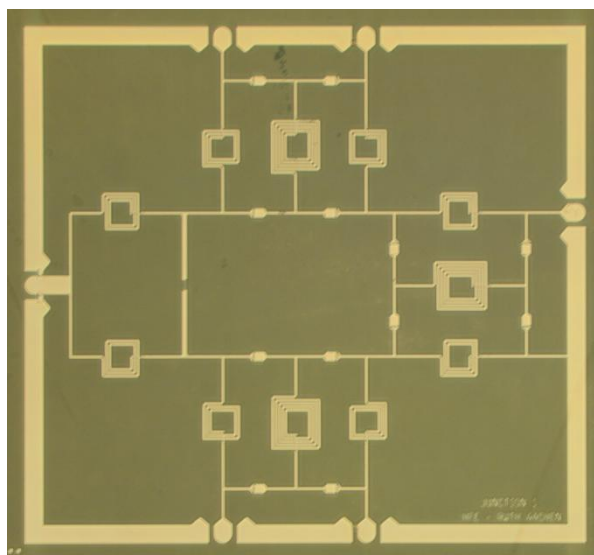


Figure 1: Graphene based six-port receiver integrated circuit on a glass substrate for wireless communication.



Figure 2: The flexibility of graphene based devices could be the enabling factor for applications in IoT.