

Graphene for Flexible Electronics

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The chemical, electrical, optical, mechanical and thermal properties of graphene make it an interesting new material for a multitude of applications. In the electronics industry graphene is expected to become a significant new technology platform that creates applications ranging from functional composite materials to integrated circuits and printed electronics. This paper will discuss the use of graphene in manufacturing novel electronic devices based on flexible and stretchable electronics. Opportunities to improve the properties of the key components of flexible electronics, such as, batteries, supercapacitors, sensors, transmission lines, touch screen, transistors, are discussed. Examples of Nokia's results related to electronics, optoelectronics and electrochemistry will be shown, with a vision of their impact in radio, sensor, battery and computing technologies. Applications of graphene in solar cells, batteries, supercapacitors and fuel cells are summarised, and graphene as a conductive ink for printed electronics is also discussed. Finally, the presentation discusses an industrial vision of graphene as a new technology platform, the challenges in creating new value networks and chains, the European position in graphene industrialisation, and opportunities for new manufacturing based on graphene. The flexible electronics work in the EU FET Graphene Flagship project will be shortly introduced.