

Graphene-enabled innovative solutions for consumer electronics

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New technology enablers - such as new functional materials – may allow the mass scale production of innovative electronic devices with outstanding performance and new form factors, driving innovation in mobile industry. In particular, graphene and other 2D materials have already demonstrated a great potential for radical technological innovations in a plenty of R&D fields, offering new opportunities in electronics and optoelectronics.

We'll report a few examples to illustrate how the development of graphene technology may impact on the field of flexible electronics, providing solutions for sensing and energy storage. Highly sensitive graphene-based sensors have been demonstrated in various fields, spanning from chemical sensors to photodetectors, and 2D materials are ideal candidates for the actual achievement of flexibility and stretchability. In addition, the unique 2D nature of these materials can lead to unprecedented sensing performances, paving the way to new applications in various fields such as consumer electronics, mobile health and environmental monitoring.

Furthermore, graphene is an ideal material for the development of portable energy storage components, thanks to the high specific surface area, the superior electrical conductivity, a high chemical tolerance and a broad electrochemical window. Graphene technology can enable a combination of flexible components with low-cost and low-power sensors, thus opening new avenues in the field of portable electronic devices. Also, scalability to mass production together with compatibility with low cost manufacturing processes, such as printing and roll-to-roll techniques, are major advantages of this technology. Therefore, graphene may represent an important technological platform for the next generation of mobile devices.