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Graphene – Cellular Interactions and Implications for Medical Device Technologies

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Graphene is an extraordinary material with a combination of properties including electrical conductivity, exceptional strength and biocompatibility that makes it attractive in a number of areas of application.

Careful control of all steps from sourcing the graphite, to exfoliation and chemical modification of graphene sheets, is important in rendering the dispersions obtained amenable to subsequent fabrication such as spray coating, printing or fiber spinning.

Recent advances in our laboratories have involved the development of chemistries that retain the inherent properties of graphene while rendering it processable in aqueous or organic solvents.

Chemistries developed here have also enabled effective formation of graphene containing composites that are amenable to fabrication.

Success in these areas has led to the application of graphene and structures containing it, for energy storage and conversion, as well as in biomedical areas including neuronal recording and stimulation electrodes, as well as scaffolds for bone regeneration.

As part of this presentation a critical non-technical requirement will be discussed: the need for a collaborative interdisciplinary approach to ensure effective and efficient progress.

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