

Abstract Submitted  
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**Toxicity study of water transferred graphene-based nanostructures for cell culture substrate** FABRICIO BORGHI, TIM VAN DER LAAN, University of Sydney / CSIRO, MUSARAT ISHAQ, SHAILESH KUMAR, CSIRO, KOSTYA OSTRIKOV, University of Sydney / CSIRO / University of Queensland — Graphene has attracted enormous attention due to its unique physical and chemical properties. Early researches had focused on its electrical properties for device applications. Nowadays graphene has attracted increased interest in bio-medical applications, such as cell culture substrates. Substrates are critical for: investigating early stage development of cells, new drugs tests and tissue engineering. Benefits of graphene for this application are: it can be produced with desired structural morphology, its surface properties can be modified via plasma or chemical treatment (decorated with specific functional groups), and it can be transferred to a plethora of substrates (high influence of cells fate). Successful applications of graphene-based materials for bio-med applications are predominantly produced via chemical methods. When produced via Thermal CVD, the transfer to the desired substrate involves chemical treatment, potentially contaminating the graphene. In this work, we use a unique plasma produced graphene, transferred to glass via a chemical-free process, as cell culture substrates. This work aims graphene's bio-toxicity. Our results show that our material is non toxic, and cells morphology and proliferation indicates similar growth among all samples and the control.

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