

Title of thematic issue: GRAPHENE MEDICINE

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Aim and Scope

Graphene-based biomaterials have gained a lot of interest in biomedical field due to their excellent biocompatibility, low cost, good conductivity, manufacturing at large scale, and proper electronic, optical, mechanical or even thermal properties. Starting from the idea that suitable drug delivery systems (DDS) can be created by using this material, extensive work has been published proving the use of graphene in various applications in biomedicine (for instance biological sensing, development of antimicrobial materials, targeted gene delivery, scaffolds for tissue engineering etc.). Moreover, the use of graphene as a nanocarrier is very exploited in terms of cancer therapies. It was proved that conjugated graphene with SO₂H groups and folic acid is a promising transporter for two well-known antitumorals: camptothecin – CPT and doxorubicin (DOX) presenting a higher toxicity for breast cancer cell lines (MCF-7). Another approach investigated for cancer and other genetic disorders (Parkinson's disease) is gene therapy which requires a material which can prevent the damage of DNA by nuclease degradation. A promising result in this regard was reported for graphene conjugated with polyethylenimine.

In terms of bioimaging, small graphene with sizes below 10 nm obtained from graphite by chemical oxidation technique have been developed recently by scientists and are mentioned as GQDs – graphene quantum-dots. They are used for imaging purposes due to their ability to exhibit intrinsic fluorescence. As a current challenge it can be stated that the interactions between graphene and human tissues are far to be completely understood, therefore, research is still needed in order to evaluate the exact potential of these materials in biomedical field, even if the use of graphene in this area has seen a spectacular progress in the last years with encouraging results.

The aim of this special issue is to present the latest updates in the field.

Keywords: graphene, graphene oxide, nanocarriers, biological approach, nanomedicine, etc.

Subtopics

1. Graphene as a nanocarrier
2. Incorporation of antitumorals in graphene-based nanomaterials
3. Gene therapy
4. Graphene quantum dots
5. Biological interaction between human tissue and graphene-based materials
6. Graphene in tissue regeneration

Schedule

Manuscript submission deadline: October 1st, 2018

Peer Review Due: November 10th, 2018

Revision Due: December 10th, 2018

Announcement of acceptance by the Guest Editors: December 20th, 2018

Final manuscripts due: January 15th, 2019

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