

عنوان مقاله:

The effect of graphite sources on preparation of Photoluminescent graphene nano-sheets for biomedical imaging

محل انتشار:

مجله علوم نانو، دوره 4، شماره 3 (سال: 1396)

تعداد صفحات اصل مقاله: 6

نویسندگان:

Soroush Moasses Ghafary - *Department of Nanobiothechnology, University of Tarbiat Modares, Tehran, Iran*

Shadie Hatamie - *Institute for Nanoscience and Nanotechnology (INST), Sharif University of Technology, Tehran, Iran*

Maryam Nikkhah - *Department of Nanobiothechnology, University of Tarbiat Modares, Tehran, Iran*

Saman Hosseinkhani - *Department of Biochemistry, Faculty of Biological Sciences, Tarbiat Modares University, Tehran, Iran*

خلاصه مقاله:

Objective(s): Graphene as two-dimensional (2D) materials have attracted wide attention in different fields such as biomedical imaging. Ultra-small graphene nano-sheets (UGNSs) have been designated as low dimensional graphene sheets with lateral dimensions less than few nanometres (≤ 500 nm) in one, two or few layers. Several studies have proven that the process of acidic exfoliation and oxidation is one of the most effective methods to synthesize low dimensional graphene sheets. The band gap of graphene can be changed through changing the reaction temperature resulting in different photoluminescent colors. The aim of our study is synthesis of multi-color photoluminescent UGNSs for biomedical imaging. **Materials and Methods:** Two different UGNSs were synthesized from two different graphite sources via acidic treatment with a mixture of sulfuric and nitric acids. The prepared UGNSs were characterized by UV-Vis, photoluminescent, Raman spectroscopy and scanning electron microscopy (SEM). The photoluminescence colors of the prepared UGNSs were detected under excitation wavelength of 470 nm using optical filters. **Results:** The results showed that the graphite primary source is a determinant factor in the synthesis of different UGNSs. While altering reaction temperature didn't significantly change the emission wavelengths; however it affected their photoluminescent emission intensity. **Conclusion:** Overall, nontoxic UGNSs synthesized by simple acidic treatment of graphite with different photoluminescent colors (green, yellow and red) can be a promising fluorescent probe for bioimaging.

کلمات کلیدی:

Bioimaging, Graphite source, Photoluminescent, Ultra-small graphene nano-sheets

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/893433>



