

## عنوان مقاله:

Effect of graphite oxidation on the yield and quality of graphene synthesized by supercritical ethanol exfoliation

## محل انتشار:

پانزدهمین کنگره ملی مهندسی شیمی ایران (سال: 1393)

تعداد صفحات اصل مقاله: 4

## نویسندگان:

Alireza Hadi - *Department of Chemical Engineering, University Of Tehran, Tehran, Iran*

Javad Karimi-Sabet - *Nuclear Fuel Cycle School, Nuclear Science and Technology Research Institute, Tehran, Iran*

Seyed Mohammad Ali Moosavian - *Department of Chemical Engineering, University Of Tehran, Tehran, Iran*

Sohrab Ali Ghorbanian - *Department of Chemical Engineering, University Of Tehran, Tehran, Iran*

## خلاصه مقاله:

After fullerene and nanotubes, graphene is new allotrope of carbon. This attractive nanomaterial can be produced by different methods, but large scale synthesis of high quality graphene remains challenge. In this work, we use less common approach for graphene synthesis. This technique is based on utilization of supercritical fluid. Ethanol with temperature of 400oC and pressure of 40MPa used as solvent. TEM image shows that exfoliation of graphite performed successfully in supercritical ethanol medium. In addition, supercritical ethanol was used to reduction and exfoliation of graphite oxide. FT-IR spectra indicates that reduction of graphite oxide can be done with its exfoliation Simultaneously in supercritical ethanol. Reduction of graphene oxide can be relates to combination of thermal and chemical effects of ethanol in supercritical state. Also, effect of graphite oxidation on the yield and quality of graphene was investigated and results show that oxidation of graphite can improve the yield of supercritical process from 12.5% to 26.8%, but raman spectra revealed that quality of graphene samples that produced by graphite oxide is lower than pristine graphite, which can be attributed to oxygen functional groups that remain on graphene structure

## کلمات کلیدی:

graphene, supercritical ethanol, graphite, graphite oxide, exfoliation, reduction

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