



Kinetics of Green Reduction of Graphene Oxide via *Hibiscus Sabdarriffa* L Aqueous Solution

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Abstract:In this study ,a kinetics of synthesis of reduced graphene oxide using aqueous solution of *Hibiscus Sabdarriffa L* were investigated. The reduction of graphene oxide to reduced graphene oxide was performed using aqueous solution of *Hibiscus Sabdarriffa L*(Roselle) leaves as reducing agent under mixing and sonication treatments. Various experimental conditions were investigated which involve effect of treatment time, pH , reaction temperature, and extract concentration. The kinetics of RGO formation were spectroscopy evaluated by measuring the absorbance at 660 nm based on that molar extinction coefficient of reduced graphene oxide is higher than graphene oxide by several times at this wavelength. It has been found that pseudo RGO rate formation were enhanced by high pH value, high reaction temperature and high extract amount. Also, the results indicated that conductive and spectral response properties of synthesized RGO were best in comparison with GO. Also, activation energy of RGO formation was determined. The optimum concentration of reduced graphene oxide was calculated. A good dispersion GO and RGO aqueous solution were achieved.

Key Words: green approach, reduced graphene oxide, *Hibiscus Sabdarriffa L*, kinetics, spectroscopic.

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