Aval balone kooochik,Graphite (Merck) was used for the preparation of graphene oxide by a modified Hummers’s method [1]. Graphite powders were first oxidized by sulfuric acid. Then 2.5 g of the graphite powder was first treated with a solution by mixing 12.5 ml of concentrated H2SO4 (2-3 min) with 2.5 g K2S2O8 and 2.5 g P2O5 (vazn dar shishe saat) (add quickly) (15 min stir, reflux in 80 8h). The mixture was kept at 80 ºC for 6 h using a hotplate. Subsequently, the mixture was cooled to room temperature and diluted with 500 mL de-ionized (DI) water and left overnight. The mixture was then filtered and washed with DI water to remove the residual acid. The product was dried under ambient conditions overnight (totally dry). The pre-oxidized graphite was then subjected to oxidation by Hummers’s method. The pretreated graphite powder was put into cold (0 ºC) concentrated H2SO4 (125 ml). Then KMnO4 (15 g) (poor amini) (very slowly) was added gradually under stirring (30 min stir), and the temperature of the mixture was kept below 20 ºC by cooling. The mixture was then stirred at 35 ºC for 4 h (5-6 h) (sabze lajani) and then diluted with DI water (250 ml). Because adding water to concentrated sulfuric acid medium releases a large amount of heat, the dilution was carried out in an ice bath to keep the temperature below 50 ºC.

After adding all of the 250 mL DI water, the mixture was stirred for 2 h, and then an additional 750 mL DI water was added. Shortly thereafter, 20 ml 30% H2O2 (slowly) was added to the mixture and the color of the mixture changed into brilliant yellow and began bubbling. (0.5 h stir)

The mixture was filtered and washed with 0.1 M HCl to remove metal ions, followed by 500 mL DI water to remove the acid. The resulting GO solid was dried in air.

100 cc ab ezafe kon kam kam ezafe shaved zireshire ab begir asla2n garm nashvad