# DISPERSION OF GRAPHENE OXIDE IN ETHYLENE GLYCOL AND 2-PROPANOL

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## ABSTRACT

The dispersion of Grapene Oxide (GO) has been study in order to investigate the effect of time sonicating on the dispersion of GO in the ethylene glycol and 2-propanol. Besides, this experiment is also done to study the stability of the disperse GO in both solvents after a week. Poor stability of GO has become major problem during the dispersion of GO. In order to overcome this problem a study has been introduce which is dispersion of graphene oxide in solvents. In this study, the ethylene glycol and 2-propanol have been used as a solvent for the dispersion of GO. The focus of this research are on the dispersion behavior of GO when sonicate at different time.

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# CHAPTER 1

# INTRODUCTION

## 1.1 RESEARCH BACKGROUND

Nowadays, the Graphene Oxide (GO) are widely been used in the scientific and technological studies due to its strong mechanical strength [1, 2, 3], high electron mobility as well as high thermal conductivities [4]. According to the researchers, Graphene Oxide have wide application in biosensors, nano electronic devices, protein digestion, and catalysis [1, 5, 6]. The unique chemical structure of Graphene Oxide where it consists a lot of oxygen functional groups such as epoxide, hydroxyl, and carboxylic group [1-3, 6, 7] making the GO as a favorite for the support in enzyme immobilization [1-3]. Besides, having a lot of oxygen functional groups also making GO becomes strongly hydrophilic where it can easily be dispersed in the water [7].

Dispersion is a process by which agglomerated particles are separated from each other and a new interface between an inner surface of the liquid dispersion medium and the surface of the particles to be dispersed is generated [8]. For this case, it can be simplified as a process where the GO is dispersed in solvents. The dispersion of GO need to be done since the GO itself is very hard [4]. The dispersion of GO can be done by using aqueous or any organic media [4-7]. Actually, dispersion process is a complicated and less-understood process than most people believe. The dispersion of GO is considered success if the graphene oxide is dispersed at useful concentration and if graphene oxide remains dispersed over reasonable period of time [4]. To prepare a stable dispersion of GO, several studies have been developed which are dispersion