UNIVERSITI TEKNOLOGI MARA

EFFECT OF GRAPHENE OXIDE ON DEMULSFICATION PROCESS OF HEAVY CRUDE OIL EMULSION

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ABSTRACT

Emulsion is one of the common problem that occur in the oil and gas industry. From ages many researcher develop method like biological, chemical, electrical and mechanical way to overcome and treat the problem. Untreated emulsion can cause a lot of problem either in the production, transportation or in the refining Chemical demulsification is one of the famous method to separation of oil and water emulsion..The higher price of chemical used in the market industry create a potential study on the graphene oxide as a demulsifier. Recent study on Graphene oxide show ability to act as efficient demulsifier. The abundance and cheap price can be problem solver to the emulsion problem. The synthesis of graphene oxide created from raw graphite that undergo strong oxidation based on Hummer method. The categorization of sample can be determine by using FTIR and XRD test. FTIR used to detect common functional group especially on Graphene Oxide which is state to have an oxygen group like hydroxyl, carbonyl and alkoxyl. XRD was used as definite method to ensure the synthesis of graphene oxide was successful based on typical graphene oxide peak. The test for the efficiency study of graphene oxide as demulsifier can be divided in two part which is bottle test and Interfacial tension. The demulsification process efficiency of added graphene oxide can yield in the range of 99.87% to 99.98%. The reason can be supported by the interfacial tension reduction with increasing concentration of graphene oxide.

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INTRODUCTION

1.1 RESEARCH BACKGROUND

In nowadays lifestyle, the dependency of the world towards energy getting more important. Energy is widely needed for ease and keep our world in tick. The factory and manufacturer need electricity to produce needs and good for consumer, the vehicle use as main transportation method need fuel to start working, and even our daily activities like cooking , watching television, and lighting the household consume energy. As for achieved the world energy consumption, the source of energy need to keep up with the consumer demand. Solarin and Lean indicate one of the main natural energy source from fossil fuel is oil that importance in several economic activities like transportation, industrial, residential and electicity (2016). The trend of oil production that mostly stagnant in recent year get the world attention due to gradually increasing trend of consumption. According to BP Statistical Review of World Energy (2013), the difference of oil consumption between the year 2000 and 2012 increase by 17 % with the 89773 thousand barrel of oil make up to 32 000 million barrel per year of consumption alone in 2012. Solarin and Lean, 2016

The most obvious method to overcome the world energy requirement are exploit more oil potential. The problem is conventional oil resources will soon face decline phase. Conventional oil for all over the countries near the limit reserve set exclude five major Middle-East supplier (Bentley, 2002). Breaking the limit of oil resource is need to increase the production. One of the method to increase the production of oil is to implement enhanced oil recovery method. Enhanced oil recovery method artificially alter the reservoir properties to extract oil that cannot be done by natural depletion. This technique will include the injection of water in the process such as water alternate gas injection. Although this technique can be positively increase recovery and production