CO2 SEQUESTRATION IN DEEP SALINE AQUIFERS

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ABSTRACT

Carbon dioxide sequestration is developed as one of option to reduce the CO_2 emission into the atmosphere. But, this application is expensive and lack of literature regarding this topic. This project focuses on pH studies with respect to concentration of brines different temperature and pressure. The experiment used synthetic brines as a sample due to difficulty to obtain and store the natural brines. The solutions with different concentration of salt were prepared. Before enter the reactor, the brines will be added with 5 g of sand that already sieved. The reaction will take when the CO_2 injected into the reactor. The presence of the carbonation is high due the results that show the pH value increasing with high pressure and temperature. The expected outcome of this study is successful accumulation of mineral precipitation.

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CHAPTER 1

INTRODUCTION

1.1 Research Background

There are several elements of greenhouse gases that exist naturally in the atmosphere which are methane (CH_4), carbon dioxide (CO_2), water vapor (H_2O), nitrogen oxide (N_2O) and Ozone (O_3) (Piri, 2005). Burning fossil fuels such as coal, oil and natural gas will produce CO_2. Fossil fuel is naturally formed from different sources such as decayed dead plants and animals and eruption of volcanic. CO_2 is consumed by the processes of dissolution into the oceans. Still, the amount of CO_2 is amplified with the constant development of industry (Ravens, 2005).

Sequestration of CO_2 emissions from human activities that give impact to environment has been the important issues and there are many strategies that have been taken to reduce the worsening climate change. The need for technologies capable of accomplishing this task is apparent.

Due to such necessity, the main objective of this study is to evaluate possible way to sequester the CO_2 emitted from a power plant and other sources in the most effective method possible (Ross, 2007).

To this end, several existing and proposed methods of sequestration were examined and compared on the basis of several controlling criteria including the location of the power plant, sustainability of the sequestration method, environmental health and safety issues, potential storage capacity, public acceptance of the method, and economic