CHAPTER I
INTRODUCTION

Emission of greenhouse gas (GHG) is one of the environmental concerns. The problem is worldwide which affects all living things on earth. The greenhouse gases in the Earth's atmosphere are mainly composed of water vapor (H_2O), carbon dioxide (CO_2), methane CH_4, nitrous oxide (N_2O), chlorofluorocarbons (CFC_3) and ozone (O_3). Among these gases, CO_2 is mostly emitted into atmosphere due to human activities such as cultivation, coal mining, oil drilling, and etc. According to Kyoto Protocol and international commitment, industrialized and developed countries have to find the ways to reduce emission of CO_2, so that global warming and climate change can be managed. To deal with CO_2 emission, CO_2 capture and storage (CCS) must be established.

Nowadays, there are various technologies to capture CO_2 from industries such as absorption, adsorption, membrane separation, cryogenic separation, and chemical-looping combustion (CLC). CO_2 absorption using amine solvents is commercially. Amines used include monoethanolamine (MEA) which can react effectively with CO_2 to form carbamate through zwitterions mechanism (Aboudheir *et al.*, 2003). However, this method still has drawbacks including high operating cost and corrosion. Adsorption with solid adsorbents can also be used. It still cannot cope with high concentration of CO_2 and has low selectivity to CO_2 capture. For increase CO_2 capture capacity of adsorption technique, effective amines are often imported onto solid sorbent.

An objective of this research is to fabricate adsorbent for CO_2 adsorption technique using an amine grafted on biopolymer solid adsorbent