

## A Study on the Effect of the Degree of Alkyl Substitution of Amine in CO<sub>2</sub> Dry Sorbents

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The use of amine in chemical absorption and adsorption is one of the most matured and continuously growing technologies of Carbon Capture and Sequestration (CCS) to mitigate climate change. In chemical adsorption wherein amine is chemically immobilized in the pores of silica, several structure of amine is of great interest. The effect of the difference in number of amine groups (mono-, di- and tri- amines) and degree of substitution (primary, secondary and tertiary amines) on CO<sub>2</sub> sorption is being widely studied. In this work, (3-aminopropyl)trimethoxysilane (1°), [3-(methylamino)propyl]trimethoxysilane (2°) and [3-(diethylamino)propyl]trimethoxysilane (3°) are grafted on amorphous silica to study the effect of the degree of alkyl substitution of the amine on CO<sub>2</sub> adsorption and on the stability of the sorbent after several cycles. The prepared sorbent was evaluated for its CO<sub>2</sub> sorption capacity and kinetics behavior using TGA instrument. Elemental analyzer, BET analysis and FT-IR were also used for further characterization of the sorbents.