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KEY WORD: FLY ASH / ZEOLITE / HYDROGEN SULFIDE

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CATALYTIC OXIDATION OVER ZEOLITE FROM COAL FLY ASH. THESIS

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Zeolites were synthesized from fly ash from Mae-Moh power plant by hydrothermal treatment. The activating condition employing 2 molar of NaOH solution was; 100°C, atmospheric pressure and 72 hrs, where one type of zeolite was found, zeolite type P. With 2 molar of KOH solution at the same activating condition, another type of zeolite was found, chabazite. Other compounds identified were sillimanite, mullite and laumontite-leonhardite.

Kinetics of catalytic oxidation of hydrogen sulfide over chabazite catalyst was investigated from 200°C to 600°C under atmospheric pressure in a differential packed bed reactor. In the experiment, synthesized coal gas was used which contained 0.079-0.314 mole% hydrogen sulfide and 0.1-0.4 mole% sulfur dioxide, balanced with nitrogen. From kinetic correlation using multiple linear regression, the result shows that order of the reaction of hydrogen sulfide is 0.8 and sulfur dioxide is 0. The activation energy of hydrogen sulfide oxidation reaction over chabazite catalyst is 2.0 kcal/mol hydrogen sulfide and frequency factor is  $8.79 \times 10^7 \text{ mol hydrogen sulfide-sec}^{-1}\text{-g chabazite}^{-1}\text{-kPa}^{-(0.8)}$