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Dissolution of Zeolite as a Sorbent in Flue Gas Desulphurization Process Using a pH Stat Apparatus

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Abstract : Sulphur dioxide is a harmful gaseous product that needs to be minimized in the atmosphere. This research work investigates the use of zeolite as a possible additive that can improve the sulphur dioxide capture in wet flue gas desulphurisation dissolution process. This work determines the effect of temperature, solid to liquid ratio, acid concentration and stirring speed on the leaching of zeolite using a pH stat apparatus. The atomic absorption spectrometer was used to measure the calcium ions from the solution. It was found that the dissolution rate of zeolite decreased with increase in solid to liquid ratio and increases with increase in temperature, stirring speed and acid concentration. The activation energy for the dissolution rate of zeolite in hydrochloric acid was found to be 9.29kJ/mol. and therefore the product layer diffusion was the rate limiting step.

Keywords : calcium ion, pH stat apparatus, wet flue gas desulphurization, zeolite
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