World Academy of Science, Engineering and Technology
International Journal of Materials and Metallurgical Engineering
Vol:10, No:02, 2016

Enhancement of CO2 Capture by Using Cu-Nano-Zeolite Synthesized

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Abstract : In this study synthesized Cu-nano-zeolite was evaluated for its potential use in CO2 capture. The specific surface area of Cu-nano zeolite was measured as 869.32 m2/g with a pore size of 3.86 nm. The adsorption capacity of CO2 by Cu-nano zeolite was decreased with increasing temperature. The identified adsorption capacity of CO2 by Cu-nano zeolite was 7.16 mmol/g at a temperature of 20 oC and at pressure of 1 atm. The adoption selectivity of CO2 over N2 strongly depend on the temperature and the highest selectivity by Cu-nano zeolite was 50.71 at 20 oC. From analysis of regeneration characteristics of CO2 loaded adsorbent, the percentage removal of CO2 was maintained at more than 78.2 % even after 10 cycles of adsorption-desorption. Based on these result, the Cu-nano zeolite can be used as an effective and economical adsorbent for CO2 capture.

Keywords : CO2 capture, selectivity, Cu-nano zeolite, regeneration.
Conference Title : ICNST 2016 : International Conference on Nano Science and Technology
Conference Location : Kuala Lumpur, Malaysia
Conference Dates : February 11-12, 2016