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# Laboratory-scale investigation of the removal of hydrogen sulfide from biogas and air using industrial waste-based sorbents

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## Abstract

Biogas is a valuable renewable energy that can be used as a fuel or as raw material for the production of hydrogen, synthesis gas and chemicals. Apart from its main constituent of CH<sub>4</sub> and CO<sub>2</sub>, it also contained various undesirable contaminants. The removal of these contaminants such as H<sub>2</sub>S will significantly improve the quality of the biogas for further use. This work involved the valorization of calcium carbonate (CaCO<sub>3</sub>)-based solid wastes for the removal of H<sub>2</sub>S from the biogas stream. The solid wastes were analyzed by different physicochemical methods. CaCO<sub>3</sub> was found as the main component of both solid wastes, while trace amounts of other elements such as Mg, Al, etc. were also present. The solid wastes were dispersed in water and the resulted suspensions were tested for the removal of H<sub>2</sub>S from the gas phase, using a triphasic gas/liquid/solid glass reactor at room temperature and pressure. A

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