https://dspace.mm-aist.ac.tz

Materials, Energy, Water and Environmental Sciences

Research Articles [MEWES]

2024-04-13

## Natural and low-cost sorbents as part of the solution for biogas upgrading: A review

Mrosso, Register

Springer Nature Link

https://link.springer.com/article/10.1007/s10450-024-00464-9

Provided with love from The Nelson Mandela African Institution of Science and Technology

Natural and low-cost sorbents as part of the solution for biogas upgrading: A review

Register Mrosso, Achisa C. Mecha & Joseph Kiplagat

To download a complete text, click the link below;

DOI: <a href="https://link.springer.com/article/10.1007/s10450-024-00464-9">https://link.springer.com/article/10.1007/s10450-024-00464-9</a>

## **Abstract**

The availability of pollutants in biogas especially carbon dioxide hinders its application in the enginery parts by minimizing its calorific standards. The presence of CO<sub>2</sub> contributes to global warming which is a worry globally. Thus, upgrading technologies is needed for safe utilization on small-scale and wide-range. The commercial technologies mostly discussed in the literature are pressure swing adsorption, membrane separation, physical scrubbing, and water scrubbing. These techniques are costly concerning investment, and operation costs, and are energy-intensive, especially on a small scale. Thus, difficult to apply especially in low-income economies, and necessitates the development of natural, low-cost sorbents for biogas upgrading like biomass, eggshell waste, and clay soil. The current review critically evaluates the potentiality of new approaches using low-cost sorbents for biogas upgrading. The review proposed that activating and additional of pore-forming materials in the adsorbents is necessary to significantly enhance their performance.