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Trial CO₂ extraction ceramic membrane with an integration of a CO₂ laser gas detector

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Continued rise in associated carbon dioxide (CO₂) emissions and associated risk of climate change is a major concern globally. As a result, reasonable, dependable and safe energy supplies are essential for sustainable economic growth. The perception of a zero emission coal-fired power plant as a large source of very high pressure flow of CO₂ is presented. This article also illustrates a plan that aims to fashion a membrane-based system to remove CO₂. The CO₂ concentration in the mixture is detected by the use of a CO₂ laser gas sensor. The innovative technology employed utilizes hybrid inorganic ceramic membranes for carbon dioxide capture from a range of other gases such as those encountered during flue gas handling processes. The most probable profit of the CO₂ gas detector system is investigated with emphasis on its enormous prospects especially for emission trading applications in fossil fuel power plants. Experiments were carried out with gas flow through hybrid membrane with the retentate port fully opened and closed. Results obtained show an appreciable CO₂ extracted and offer better capture option in comparison to conventional methods.

Biography

Ngozi Claribelle Nwogu is currently undergoing her PhD programme at the Robert Gordon University, Aberdeen, United Kingdom having previously obtained her Bachelor and Master of Engineering degrees in Petroleum Engineering. She is working on 'Advanced membrane design for improved Carbon dioxide capture'. By occupation, she is a University Lecturer and has published and co-authored over 17 academic/professional journal papers and made over 15 oral, e-poster and poster presentations at international conferences worldwide. Her research interests are in the areas of design of inorganic hybrid ceramic membrane and multi-channel membrane reactors for carbon dioxide capture from flue gases. She is a Member of the Society of Petroleum Engineers (SPE), American Chemical Society (ACS), Registered Petroleum Engineer by Council for the Regulation of Engineering in Nigeria (COREN), International Association of Engineers, Nigerian Society of Engineers (NSE), Association of Professional Women Engineers of Nigeria (APWEN) and European Membrane Society (EMS).

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