

## **Polymer clay nanocomposites for gas separation: a review**

### **ABSTRACT**

Application of polymer clay nanocomposites for carbon dioxide (CO<sub>2</sub>) removal in gas separation by using mixed matrix membranes is promising due to the advancement of nanotechnology and polymer processing. In this regard, as clay is abundantly available, cheaper and has attractive physical and chemical properties, the incorporation of these silicate layers within the polymer matrix as filler is favourable. In principle, the exfoliated clay single layers create higher tortuosity effects and may improve the separation properties of the membrane. This review presents a synopsis of the polymer clay nanocomposites development and applications as well as their potential for the removal of CO<sub>2</sub> from gas mixtures. Details of the recent works in the development of mixed matrix membranes embedded with clay for gas separation were also discussed. In addition, the problems and mechanism to evaluate the exfoliation properties were emphasized identifying the gaps and motivates for future research works utilizing clay nanoparticles as membrane filler