

Application of Eggshell Membrane as an Adsorbent for Pollutants Removal; A Systematic Review

Abstract

Introduction: Introduction: The eggshell membrane (ESM) has gained attention for its utility as an adsorbent in various pollutant removal. **Material & Methods:** This study systematically reviewed 17 articles published from 2011 to 2021 that use ESM as adsorbent in the wastewater treatment. **Result and Discussion:** The review found that both modified and unmodified ESM-based adsorbents are promising for removing various types of contaminants. The pollutants targeted by the studies were heavy metals, dyes, and metalloids. Most of the research indicated that the ideal temperature for adsorption was at room temperature, and a lower pH range was favourable. More than 52% of the articles found that the Freundlich isotherm model best fits the adsorption data, indicating that the process is multilayer and heterogeneous. **Conclusions:** ESM-based adsorbents hold potential for pollutant removal. However, additional research is required to explore the applicability of these adsorbents for addressing different categories of contaminants.

Keywords

Adsorbents; Eggshell membrane; Pollutants; Systematic literature review