# PARAMETERS SENSITIVITY ANALYSIS ON MATHEMATICAL MODEL OF PHENOL EXTRACTION USING POLYMER INCLUSING MEMBRANE (PIM) VIA NUMERICAL APPROACH

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#### Abstract

Polymer Inclusion Membrane (PIM) is a membrane separation technology for the safe and effective extraction and transport of metal ions and small organic molecules. In this study, PIMs were formed from Poly Vinyl Chloride (PVC) and copoly carrier compounds (eugenol-ethylene glycol dimethacrylate) transport phenols from the source phase to the receiving phase namely NaOH. The dynamics of extracted phenol concentrations can be expressed in the form of Fick diffusion equations which are equipped with initial conditions and certain boundary conditions. This transport model will be assessed numerically to see how the behavior of the phenol concentration at each time t and the effect of the parameters involved in the dynamics of the phenol concentration. The results show that the parameters of the initial concentration of phenol solution, membrane thickness, and membrane composition affected the extraction speed and the amount of phenol concentration.

Keywords: Fick diffusion, phenol, Polymer Inclusion Membrane (PIM)