

Preparation of phenylalanine imprinted composite membrane with improved permselectivity

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Molecularly imprinted membranes (MIMs) have superior stability, easy scale up, and low preparation cost for most of the target analytes. MIMs are utilized in various areas such as the food, pharmaceutical, and environmental industries, etc. MIMs can be improved in their function and behavior by incorporating some functional filler. In the present study, composite membranes (CM) comprised of L-Phenylalanine (L-Phe) imprinted P(MMA-co-EGDMA) submicron/nanoscale beads (LIBs) and D-Phe imprinted P(AN-co-AA) membrane (DIM) or CMLIBDIM were prepared by the phase inversion technique after a uniform dispersion of the LIBs into the D-Phe incorporated P(AN-co-AA) solution using a simple physico-mechanical process. The assemblies of the prepared CMLIBDIM and D-Phe imprinted non-composite membranes (DIMs) were utilized separately in the ultrafiltration of D,L-Phe racemic mixture for chiral separation. CMLIBDIM had higher values of permselectivity, percent swelling ratio, and water holding capacity. Moreover, the values of the adsorption selectivity, rejection selectivity and percent rejection were relatively lower than the values obtained with the DIMs.