

## Modeling of a pervaporation process for concentration of hydrogen peroxide

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The pervaporation of hydrogen peroxide from an aqueous solution using a hybrid Nafion®-silica membrane (containing 10 wt% of SiO<sub>2</sub>) was investigated. An approach to the modeling of the pervaporation process was presented. The approach was based on a semi-empirical model which was developed by applying sorption-diffusion mechanism and an Arrhenius relationship for the temperature dependency to predict the pervaporation performance in terms of permeate flux and selectivity. Hereby, effects of the operating conditions including feed concentration, feed temperature and permeate pressure, were calculated and compared with the experimental data. In addition, the required operating time for the scale-up of such a batch pervaporation process with a given retentate hydrogen peroxide was estimated from the developed model.