

## Abstract

Direct contact membrane distillation (DCMD) offers an attractive operation for the separation of mixtures at atmospheric pressure with reasonable energy requirement. A new simultaneous heat and mass transfer model in DCMD in a hollow fiber configuration is presented. Flow regime in feed and permeate side, the variations of mean temperature and concentration along the membrane module, the length of the membrane, and various properties of membrane characteristics are taken into account in the present model. A system of nonlinear equations describing the DCMD process is solved numerically for each cell using the FSOLVE coding, which is a built-in function in MATLAB VR to find the influence of the temperature and velocity of the feed and permeate streams, and the salt concentration of the feed along the module on the permeate flux. The predicted results by the new model show a good accord with a wide range of various experimental results available in the literature.