

ABSTRACT OF THE DISCLOSURE
FLUOROCHEMICAL RECOVERY AND RECYCLE USING MEMBRANCES

A method for the separation and recovery of fluorochemicals from a gas stream containing a diluent gas and fluorochemicals by contact of the gas stream with a membrane, comprising the steps of: compressing a gas stream containing a diluent gas and fluorochemicals to an elevated pressure; heating the gas stream containing a diluent gas and fluorochemicals to an elevated temperature sufficient to increase the flux of the permeate stream and to increase the selectivity of the membrane for the permeation of the diluent gas relative to the permeation of the fluorochemicals; contacting the gas stream with a membrane which is selectively more permeable to the diluent gas than the fluorochemicals to result in a permeate stream rich in the diluent gas and a retentate rich in fluorochemicals; contacting the gas stream with one or more additional membranes which are selectively more permeable to the diluent gas than the fluorochemicals to result in a second permeate stream rich in the diluent gas and a second retentate rich in fluorochemicals; and recycling the second permeate stream to be compressed with the gas stream containing diluent gas and fluorochemicals to an elevated pressure. Preferably, the second retentate rich in fluorochemicals is further purified by adsorption or low temperature rectification to provide a fluorochemical-rich product stream and a diluent-rich vent stream.

(Figure 1)