

Use of catalytic membranes as interphase contractors for multiphase reactions

The invention is concerned with a method of conducting a gas-liquid or liquid-liquid reaction in the presence of a catalyst. The method of the invention comprises the steps of (a) providing a catalytic membrane comprising particles of the catalyst embedded in a polymer matrix; (b) contacting one side of the catalytic membrane with a first reagent in gaseous or liquid phase and the other side of the catalytic membrane with a second reagent in liquid phase; and (c) allowing the first and second reagents to permeate through the catalytic membrane and contact the catalyst particles. Reaction between the first and second reagents occurs within the catalytic membrane in the presence of the catalyst.

When using a catalytic membrane comprising particles of zeolitic titanium-silicalite embedded in a matrix of pure or silane-modified polydimethylsiloxane, the method of the invention is particularly useful for carrying out the epoxidation of propylene with aqueous hydrogen peroxide and the oxygenation of various organic compounds with hydrogen peroxide.
