Pervaporative enrichment of bio-butanol from fermentation broth through PTMSP, PDMS and silicallite-PDMS composite membranes

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Biobutanol, a new potential biofuel, can be used as a better fuel than ethanol because it has 25% more Btu's per gallon, higher safety, high octane rating, more miscibility with gasoline and diesel fuel, less miscibility with water, and bettert usability in existing car engines and fuelling lines. Butanol is produced by typical fermentation using *Clostridium acetobutylicum*, where the concentration of butanol produced is extremely low (10-20g/L) due to its high toxicity to the bacterium activity. The recovery of butanol by distillation from fermentation broth is intensive energy-consuming process, and thus, the use of butanol has been delayed. Pervaporation has been considered as a promising technique from the recovery of butanol from fermentation broth since it can give the lowest energy-consumption over the other processes based on theoretical calculation.