PVA SUPPORTED CATALYTIC MEMBRANES FOR BIODIESEL PRODUCTION OBTAINED BY GAMMA IRRADIATION

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Biodiesel has emerged as an interesting sustainable alternative to the fossil diesel. Since biodiesel is made from vegetable oils or animal fats, it is renewable, degradable and generates acceptable quality exhaust gases [1].
Currently the most important processing method for biodiesel production is the homogeneous alkali-transesterification of plant oils with methanol [1,2]. In addition glycerol is always formed as by-product and thus biodiesel and glycerol must to be separated and purified to remove the basic catalyst. An important issue in biodiesel production catalysed by Bronsted basis, is the hydrolysis of triglycerides, leading to the formation of soaps and consequent emulsions. This problem can be overcome by heterogeneous catalysts [3]. Polymer entrapped or anchored catalysts can also be advantageous. A well chosen polymeric environment can regulate the selective sorption of reagents and products, enhancing catalytic activity [4,5].
In this work poly(vinyl alcohol) (PVA) supported catalytic membranes have been prepared by mutual gamma irradiation at a 60Co source using two distinct crosslinking agents: adipic acid and succinic acid. The effect of various synthesis conditions on membranes physical-chemical properties was evaluated. The membranes were characterized by FTIR, water contact angle and catalytic activity in transesterification of soybean oil. Catalytic runs were performed in jacket batch reactor and even though the results are still preliminary, they appear to be very promising.

References.
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