

# Emulsion Filtration Through Surface Modified Ceramic Membranes

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## ABSTRACT

*In this work we studied the influence of membrane hydrophobicity on the filtration of oil/water (O/W) emulsions with a dispersed phase content of 30% (V/V). The membrane filtration process was realized by using ceramic tubular hydrophilic or hydrophobic membranes with different mean pore size (0.2  $\mu\text{m}$ , 1.2  $\mu\text{m}$ , and 1.4  $\mu\text{m}$  of mean pore radius). Hydrophobic character was obtained by modifying superficially the membrane surface with a very thin polymer layer. The results obtained showed that the emulsion viscosity and droplet size distribution depend on the shearing forces and transmembrane pressure. The operating conditions and the nature of the membrane surface/emulsion interaction are the main parameters which control the type and nature of emulsion changes, such as modification of the mean droplet size, concentration into oleic phase or breaking.*

**Key Words:** Membranes; Emulsion; Microfiltration

## BACKGROUND

Emulsions are widely used and produced in the iron and steel, pharmaceutical, oil, food and metal cutting

industry (1). These emulsions are produced intentionally as final products, like mayonnaise and many cosmetic creams, whereas others are side products from the manufacturing processes, like cutting fluids and effluents from

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