

***p*-Nitrophenol permeability and temperature characteristics of an acryloyl-L-proline methyl ester-based porous gel membrane**

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Thermoresponsive porous gel membranes were synthesized by a simultaneously occurring process consisting of radiation-induced polymerization and crosslinking in aqueous solutions at various concentrations of acryloyl-L-proline methyl ester (A-ProOMe) without a crosslinker.

Permeation of *p*-nitrophenol (PNP) through a thermoresponsive porous gel membrane obtained at a monomer concentration of 80% (w/w) drastically reduced around 14°C, the lower critical solution temperature (LCST) of linear poly(A-ProOMe) in water, from 0.60×10^{-3} cm/min at 10°C to no permeation at 18°C, accompanied by changes in both size and shape of pores associated with gel shrinkage. Moreover, it was found that porous gel membranes with a porosity of approximately 60% had a greater PNP permeability constant through porous gel membranes with mutually connected pores obtained at a monomer concentration of 50% (w/w) than individually supported pores obtained at a monomer concentration of 70% (w/w).