

### 30-63 Preparation of Thermosensitive Cellophane-*Graft-N*-Isopropylacrylamide Copolymer Membranes and Permeation of Solutes Through the Membranes

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Thermosensitive membranes with high mechanical strength were prepared by heterogeneous graft copolymerization of *N*-isopropylacrylamide (NIPAAm) onto cellophane in a nitric acid solution using cerium ammonium nitrate as an initiator, and the permeation behavior of solutes such as lithium chloride and poly (ethylene glycol) s (PEGs) through the membranes at various temperatures was investigated. The degree of graft copolymerization of NIPAAm on cellophane depended on temperature, time, initiator concentration, and so on. The copolymer membranes having a high content of the NIPAAm moiety could be obtained at 25°C for 24h. The permeation of Li<sup>+</sup> through the membranes was affected by temperature, i.e., the permeation rate of Li<sup>+</sup> increased with increasing temperature up to 32°C and then decreased rapidly above 35°C. The permeation rate of Li<sup>+</sup> through the copolymer membranes at 40°C decreased considerably, but that at 20°C decreased slightly with an increasing amount of the NIPAAm moiety in the membranes. The permeation rate of PEGs with a molecular weight more than 1000 through the cellophane-g-NIPAAm copolymer membranes was considerably suppressed and only the permeation rate of PEG300 increased with increasing temperature up to 35°C and then decreased at 40°C.

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