

THERMORESPONSIVE SWELLING BEHAVIOUR AND WATER TRANSPORT ON HYDROGELS BASED ON 2-METHOXYETHYLACRYLATE

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Thermally reversible hydrogels have recently been of increasing interest in the biomedical field and in biotechnology. They can be used as biomaterial in drug delivery systems. The thermoresponsive behaviour of poly(N,N-dimethylacrylamide-co-2-methoxyethylacrylate) gels was investigated by Mueller and the phase behaviour of their thermotropic aqueous copolymers solutions by Huglin. In this work a series of thermoresponsible

hydrogels are prepared from the various molar ratios of N,N-dimethylacrylamide (DMAA), acrylamide (Am) and 2-methoxyethylacrylate (MOEA) by radiation-induced polymerization in dimethylformamide (DMF) solution with TMPTMA as crosslinker. Water and drug transport was investigated in this crosslinked polymeric materials to determine the effect of polymeric composition on transport behaviour. Swelling rates and water diffusion coefficients were used to characterize the water uptake process. Drug release rates and drug diffusion coefficient were used to characterise solute transport. Drug release experiments were conducted using gentamicin sulfate.