# Composite Cryogels Having Functional Hydrophobic Groups Preparation, Characterization and Use in DNA Adsorption

M.E. Çorman[a], N. Bereli[a], S. Özkara[b], L. Uzun[a], A. Denizli[a]

[a]*Department of Chemistry, Biochemistry Division, Hacettepe University, Ankara, Turkey*
[b]*Department of Chemistry, Biochemistry Division, Anadolu University, Eskişehir, Turkey*
*(mehmetemincorman@hacettepe.edu.tr)*

In the recent years, various techniques based on DNA separation have attracted much attention [1] because of their innovative and exciting properties that applied in different fields especially in medical fields such as drug delivery, gene therapy and genetic vaccination [2]. The purpose of this study was to investigate the adsorption behavior of DNA molecules on the different cryogels, for this reason we present two kinds of cryogels: first, poly(2-hydroxyethyl methacrylate-N-metachryloyl-(L)-trypthophan) [poly(HEMA-MATrp)] cryogel was prepared with MATrp as the monomer and the crosslinker N,N'-methylene bisacrylamide (MBAAm), second, for making micron size poly(HEMA-MATrp) particles, suspension polymerization has been applied then these particles were embedded into poly(HEMA) cryogel structure to obtain poly(HEMA-MATrp)/poly(HEMA) composite cryogels.

Poly(HEMA-MATrp)] cryogel and poly(HEMA-MATrp)/poly(HEMA) composite cryogels were characterized by swelling studies, Fourier transform infrared spectroscopy, elemental analysis, surface area measurements and scanning electron microscopy. The surface area of poly(HEMA-MATrp) cryogel was found to be 13.2 $m^2/g$ while the surface area of poly(HEMA-MATrp)/poly(HEMA) composite cryogel was 29.8 $m^2/g$ as expected. The optimum adsorption conditions for metal uptake such as pH, metal ion concentration, and adsorption time were studied. It was observed that composite cryogels could be repeatedly used without significant loss in the adsorption capacity after ten repetitive adsorption–desorption processes.

**References**

[1] L. Sun, D. Zhao, Y. Zhang, F. Xu, Z. Li, *Appl. Surf. Sci.,* **2011***, 257,* 6560-6567.
[2] I. Perçin, E. Sağlar, H. Yavuz, E. Aksöz, A. Denizli, *Int. J. Biol. Macromol.*, **2011,** *48,577-582.*