Phase Phenomena in Polymer Networks

Martin Andersson,1,* Per Hansson,1

1Department of Pharmacy, Uppsala University,
Husarg. 3, 752 37, Uppsala, Sweden

*e-mail: martin.andersson@farmaci.uu.se

The interaction between proteins and surfactant micelles (ionic and nonionic), in weakly cross linked polyelectrolyte gel networks are studied experimentally. Kinetic and equilibrium studies of self assembly of proteins and ionic surfactants, into gel networks of opposite charge is being addressed, as well as triggered release of incorporated species. Studies have been performed for both macroscopic systems as well as for systems of sub mm sized gel globules (25 -100 µm). In the latter case micromanipulator have been utilized [1,2].

Red coloured protein (cytochrome c) encapsulated in cross linked hyaluronic acid gels.

Studies also include combinations of gel network, protein and surfactant systems, addressing the issue of surfactant mediated protein drug encapsulation. Phase formations in systems are given special attention.

The polyelectrolytes that have been cross linked into gels are poly(styrene sulphonate) poly(acrylic acid) and hyaluronic acid.