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News and Views

CONFERENCE REPORT

Biopolymer Mixtures

Biopolymer Mixtures was the 56th meeting in the Easter School Series of Meetings in Agricultural and Food Sciences which are held at the Sutton Bonington Campus of the University of Nottingham. Despite the title of the meeting series, Biopolymer Mixtures was held from 19 to 21 September 1994. The format followed the traditional Easter school approach with invited speakers presenting primarily review-type papers. As a consequence it is often possible to provide a coherent programme. The meeting was roughly divided into two sections covering phase separated and interacting systems. A nice feature was that it brought together scientists interested in biochemical applications of two phase systems such as protein and cell separation processes, and the large group of workers interested in food applications. One of the major issues that emerged was the relative importance of spinodal decomposition and aggregation phenomena involving more specific interactions. This clearly depends on the kinetics of the two processes. We appear to be reaching a consensus on the mechanisms for some of the major polysaccharide synergisms. The meeting had 120 participants. As one of the organisers it is inappropriate for me to comment on its success, or otherwise, but I would like to thank my co-organisers, Sandra Hill and Steve Harding. All three of us owe a debt to the speakers and poster presenters and to Kath Brasnett for the many hours she put in as conference secretary. The twenty-three oral presentations will be published in book form by Nottingham University Press. There was a very strong poster session and the Abstracts of the majority of these are given below.

J. R. Mitchell

Abstracts of posters presented at 'Biopolymer Mixtures'

A CSLM-BASED METHOD FOR THE DETERMINATION OF PHASE DIAGRAMS OF MIXTURES OF BIOPOLYMERS

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On mixing different types of high molecular weight biopolymers in an aqueous solution, phase separation often occurs. In some cases, the occurrence of phase separation may be readily observed, because due to density differences the heaviest of the two phases is accumulated at the bottom of the vessel in which the mixture is contained. By using classical techniques, the composition of the two phases may be determined. In case the density differences are not so large, and the viscosity of the system is high, the two phases remain intimately mixed in the form of a water in water emulsion. An alternative route to determine the phase behaviour of these systems might be a microscopic technique (confocal scanning light microscopy, CSLM), using the fluorescence intensity of especially labelled biopolymers to quantify their concentration and phase volume in the system.

Experiments were performed with several mixtures of sodium alginate, fluorescently labelled with fluorescein, and sodium caseinate, fluorescently labelled with Texas Red. The viscosity of the mixtures studied was low enough to allow bulk phase separation of the phases by using an ultracentrifuge. Results for the phase volumes, and the composition of the phases, obtained independently by applying the two different methods (CSLM, or analysis of the separate phases after centrifugation) were compared and found to be in reasonable agreement.

LIGHT SCATTERING INVESTIGATION OF THE ROLE OF THE BIOPOLYMER STRUCTURE IN INTERACTIONS BETWEEN DIFFERENT BIOPOLYMERS IN DILUTE SOLUTIONS

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In studies of biopolymer solutions light scattering is one of the most informative methods which makes it possible to get valuable structural (molecular weight, size, of the macromolecules) and thermodynamic (parameters of the intermolecular interactions polymer–polymer, polymer–solvent in solution) information from one experiment. Such information is of fundamental importance for understanding both the nature of a biopolymer's functionality and the main factors affecting the functionality of the biopolymers in real food systems.

This paper will review our recent studies of the main factors controlling character and intensity of the interactions between different biopolymers in aqueous medium. Such investigations were generally carried out at ionic strengths close to the physiological value (0.1 M). Under these conditions the results obtained were relevant to the behaviour and properties of the biopolymer *in vivo* and charge effects will be substantially suppressed.