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Influence of covalent and ionic crosslinking on structure development in hydrogels assembled via *in situ* photo-polymerization

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The unique property of hydrogels arises from their structure which is a three dimensional network, created by the physical and chemical cross-linking of monomers/polymers. Traditionally, multivalent crosslinker molecules are employed in the polymerization process in order to form their microstructure. The extent of the crosslinking and the crosslink density in hydrogels govern many of their mechanical properties. The application areas of hydrogels are diverse, often used to make soft contact lenses, nappies, wound dressings and drug delivery systems. In this study, *in situ* photo-polymerization and rheology were used in the synthesis and characterization of polymeric hydrogel materials. N,N'-Methylenebisacrylamide and a range of divalent cationic species were used as crosslinking agents. Aspects associated with the structural evolution and the viscoelasticity of the resulting materials were monitored by small amplitude oscillatory shear measurements and creep measurements. The influence of each type of crosslinking agent on network development was studied. The results show that the hydrogel network is significantly influenced by the nature and concentration of the various crosslinking agents used in formulation.

Biography

Saminu M Magami obtained both his MSc and PhD degrees from the University of Leeds in Polymer Science. He has worked as a Postdoctoral Research Fellow at the University of Leeds dealing with polymers colorants, coatings and flow-rig assembly. He is currently a KTP Research Associate at Edinburgh Napier University and is actively involved in research concerning formulation assembly, photo-polymerization, experimental design and rheometry of hydrogel materials. He has published more than 10 papers in reputed journals and has served as a Reviewer for a number of well recognized journals.

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