

The Effect of the Addition of Additives on the Properties of Bisamide Organogels

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Abstract : Organogels are formed by the assembly of low molecular weight gelators (LMWG) into fibrous structures. The assembly of these molecules into crystalline fibrous structures occurs as a result of reversible interactions such as π -stacking, hydrogen-bonding, and van der Waals interactions. Bisamide organogelators with two amide groups have been used as one of LMWGs which show efficient assembly behavior via hydrogen bonding for network formation, the formation of a crystalline network for solvent entrapment. In this study, different bisamide gelators with different lengths of alkyl chains have been added to the bisamide parent gels. The effect of the addition of bisamide additives on the gelation of bisamide gels is described. Investigation of the thermal properties of the gels by differential scanning calorimetry and dropping ball techniques indicated that the bisamide gels can be formed by the addition of a high concentration of the second bisamide components. The microstructure of the gels with different gelator components has been visualized with scanning electron microscopy (SEM) which has shown systematic woven, platelet-like, and a combination of those morphologies for different gels. Examining the addition of a range of bisamide additives with different structural characteristics than the parent bisamide gels has confirmed the effect of the molecular structure on the morphology of the bisamide gels and their final properties.

Keywords : bisamide organogelator additives, gel morphology, gel properties, self-assembly

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