

Dielectric properties of lyotropic magnetic liquid crystal

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An important feature of lyotropic liquid crystals is the self-assembly of the amphiphilic molecules as supermolecular structures. We have studied the formation of nematic liquid crystal phase in solutions containing lysozyme amyloid fibrils and magnetic nanoparticles. Due to interaction of magnetic nanoparticles with fibrils the ordering of the fibrils by applying the external magnetic field was observed. Dielectric spectra of samples with various lysozyme concentrations were investigated. The analysis of the obtained results suggest that decrease in conductivity of solutions in presence of magnetic field is due to decreasing of the ion mobility caused by ordering the solution structure. The obtained results allow determination of the optimum ratio of the components which leads to formation of the solution with a more ordered structure in presence of magnetic field.

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