

Modified DNA as a Base Material for Nonlinear Optics

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Abstract : Deoxyribonucleic acid (DNA) is a biomolecule which exhibits an electro-optic properties. These features are related with structure of double-stranded helix. Modification of DNA with ionic liquids allows intensify these properties. The aim of our study was synthesis of ionic liquids that are used the formation of DNA-surfactant complexes in order to obtain new materials with potential application for nonlinear optics. Complexes were achieved through the ion exchange reactions of carbazole-based and imidazole-based ionic liquids with H⁺ ions from salmon DNA. To examination the properties of obtained complexes DNA-ionic liquids there were investigated using circular dichroism (CD), UV-Vis spectra and infrared spectroscopy (IR). Additionally, the resulting DNA-surfactant complexes were characterized in terms of solubility in common organic solvents and water.

Keywords : deoxyribonucleic acid, biomolecule, carbazole, imidazole, ionic liquids, ion exchange reactions

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