

Nanooptics and photonics

Optical properties of functionalized DNA

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During the past years, DNA molecule has attracted the attention of a large number of researchers belonging to different communities (molecular biology, organic chemistry, physics). DNA, which exhibits a charge migration, is a subject of interest for its physical properties, and particularly for a great potential of application in photonics and in molecular electronics [1, 2]. Such applications include: devices based on second and third order NLO effects, low loss optical waveguides, electron holography, organic photovoltaics and organic field effect transistors. However pure DNA is an optically passive material. In order to render it active one has to functionalize it with photoresponsive molecules.

In this paper, we report some preliminary results obtained in the fabrication of DNACTMA thin films and solution, and thin films doped with photoresponsive molecule and/or nanorods (NPs). The films were characterized by the UV and visible spectroscopy and their third order NLO response was measured by the optical third harmonic generation technique.

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