Fluorescence-Based Ligand Conjugated Biopolymer

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Biopolymers represent the most abundant organic compounds in the biosphere and constitute the largest fraction of cells. Currently, either renewable or synthetic materials may be used to produce biodegradable polymers. Two main strategies may be followed in synthesis. First strategy is to build up the polymer structure from a monomer by a process of chemical polymerization. Second strategy is to take a naturally occurring polymer and chemically modify it to give it the desired properties.

Modification of biopolymers with ligands is an important tool in targeting drug delivery, immunology, histochemistry and cell biology. The detection and quantification of biomolecules are of great interest since these molecules are of fundamental importance to our well-being. In addition, a fluorophore conjugated into a biopolymer may be used for easily monitoring the biopolymer during column separation and allows simultaneous identification of conjugate under fluorescent microscopy for in vitro and vivo studies [1].

In the present work, a novel fluorescence-based ligand conjugated biopolymer is synthesized. The fluorescence ligand is conjugated to biopolymer via the second strategy (chemical modification). The modified biopolymer is characterized by NMR, IR, UV-vis, DSC, TGA and CV measurements. Furthermore, the optical, photochemical, thermal and electrochemical properties of the biopolymer are investigated for the use in a number of different areas such as gene therapy, photovoltaic devices, polymer solar cells, biochemistry, medicine technology and photon technology.

References: