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POLYMAT

A horizontal band with a dark blue background featuring a repeating pattern of light blue hexagons.

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Functionalized polysulfobetaine for protein conjugation

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Keywords: poly(zwitterion), cyclic carbonate, conjugation, protein, NMR

Poly(zwitterion)s have attracted tremendous attention, due to their hydrophilicity, biocompatibility and superior resistance to nonspecific protein adsorption. They can be applied as PEG alternatives for the delivery of biomacromolecules, such as nucleic acids and proteins. In this context, synthesis of functionalized poly(zwitterion)s capable of conjugation to biomacromolecules or other active species under mild reaction conditions is the first step in the development of a carrier platform. Cyclic carbonates (1,3-dioxolan-2-one derivatives) display high chemo-selective reactivity towards amines therefore they are applicable in conjugation reactions carried out in aqueous media.

The communication is reporting the preparation and characterization of a polysulfobetaine bearing cyclic carbonate moiety at the one of the chain termini and its conjugation to human serum albumin as a model protein.

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Magnetite nanoparticles coated with chitosan and poly (acrylic acid) blends for biomedical applications

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Keywords: magnetite nanoparticles, chitosan coating, poly (acrylic acid) coating

In recent years, the synthesis and characterization of nanoparticles has been used in many areas of science. Magnetite nanoparticles have been highly employed in many biomedical applications, such as drugs delivery system, catalysis, and magnetic resonance imaging. The properties of the magnetic materials depends on the stabilizer type, covering their surface. In this study was obtained magnetite nanoparticles with chitosan and poly (acrylic acid). Pure monomer of acrylic acid were subjected to photopolymerization, while a photopolymerization kinetics was followed by FTIR spectroscopy. The band corresponding to the C=C vibrations has been selected for calculation of conversion degree of monomer. The structure and morphology of the obtained nanoparticles characterized by ATR-FTIR spectroscopy, X-ray analysis, and transmission electron microscopy.

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