

PVP – NEW OPPORTUNITIES FOR AN OLD POLYMER

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ABSTRACT

Xanthate-mediated Reversible Addition-Fragmentation Chain Transfer (RAFT) mediated polymerization of N-vinyl pyrrolidone (NVP) leads to well-defined polymers. Apart from narrow molar mass distributions, the nature of both end-groups can accurately be controlled. A facile method was developed to convert the ω -chain end into an aldehyde. This allows conjugation to proteins via reductive amination with the pendant amine functionalities of lysine residues.

In more recent work it was shown that the degree of functionalization of the aldehyde end-functional poly(NVP) can be maximized by variation of the reaction conditions of the initial hydrolysis reaction. Poly(γ -benzyl-L-glutamate) (PBLG) was synthesized in order to create a synthetic poly(NVP)-polypeptide conjugate. In order to optimize the efficiency of the conjugation, the N-terminus of the PBLG was extended by exactly one cysteine residue. The 1,2-amino-thiol moiety is very reactive towards an aldehyde to yield a thiazolidine linkage. Synthesis, characterization and properties of the conjugates will be discussed.