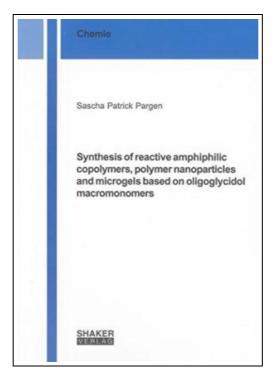
Synthesis of reactive amphiphilic copolymers, polymer nanoparticles and microgels based on oligoglycidol macromonomers



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Reviews

Extensive guideline! Its this kind of very good study. It really is full of knowledge and wisdom I discovered this book from my i and dad encouraged this publication to understand.

(Mr. Jerry Littel)

SYNTHESIS OF REACTIVE AMPHIPHILIC COPOLYMERS, POLYMER NANOPARTICLES AND MICROGELS BASED ON OLIGOGLYCIDOL MACROMONOMERS



Shaker Verlag Mrz 2013, 2013. Buch. Book Condition: Neu. 21x14.8x cm. Neuware - This thesis deals with the preparation of novel polymeric structures on the basis of hydroxy- functional prepolymers suitable for radical polymerization. These prepolymers, so called macromonomers, are versatile tools for introducing hydrophilic moieties into polymer chains or for example can be used for stabilizing particles in aqueous solution. In this thesis, next to the synthesis of the macromonomers themselves, the preparation of amphiphilic copolymers, polymer nanoparticles and microgels based on hydrophilic macromonomers is presented. All macromonomers used in this thesis are based on polyglycidol, a polyether with similar structure to poly(ethylene oxide) but with a hydroxy methyl group in every repeating unit. The synthesis of the macromonomers was performed by anionic ring opening polymerization starting from allyl glycol, 4- vinyl benzyl alcohol (VBA) and N-hydroxyethyl methacryl amide (HEMAm). Thus, low molecular weight macromonomers with three to fifty repeating units were prepared. Branched oligoglycidol macromonomers were prepared by anionic polymerization of glycidol. Linear oligoglycidol macromonomers were synthesized using acetal protected glycidol (EEGE) followed by removal of the acetal protection group under acidic conditions. Successful copolymerization of these hydrophilic oligoglycidol macromonomers with hydrophobic monomers like styrene or different (meth)acrylates was performed using free radical polymerization. These reactions were a first step to show that copolymerization of the oligoglycidol macromonomers with different hydrophobic monomers is possible. For later applications it is important to prepare amphiphilic copolymers with defined structure and architecture. Therefore nitroxide mediated polymerization (NMP) was used to prepare amphiphilic block copolymers with defined block lengths. Next to the nitroxide TEMPO, suitable for controlled polymerization of styrene and derivates, the more universal NMP initiator combination SG1/ BlocBuilder was used for the copolymerization of VBA- and HEMAm- oligoglycidol macromonomers with different hydrophobic monomers. With a hydrophobic head group and a...

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