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SYNTHESIS OF BIODEGRADABLE CHIRAL POLYESTERS BY ASYMMETRIC ENZYMATIC POLYMERIZATION AND THEIR FORMULATION INTO MICROSPHERES

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Materials with selective bio-responsiveness could have potential in medical applications. Here we report the synthesis of chiral microspheres obtained from non-crystalline aliphatic polyesters with the aim to use chirality to program polymer microsphere degradation. By enzymatic enantioselective kinetic resolution polymerization from racemic monomers, hydroxyl-terminated (R)-, (S)- and racemic (4-methylcaprolatone) (PMCL) were successfully synthesized. Preliminary degradation experiments with *Candida Antarctica Lipase B* show that the degradation rate can be tuned by the polymer chirality. Chiral microspheres around 40 microns were obtained after acrylation of the polymers and subsequent in-situ cross-linking in an oil-in-water (O/W) emulsion evaporation approach.