

**TAILORMADE POLYETHER ARCHITECTURES: FROM
HYPERBRANCHED POLY(ETHYLENE GLYCOLS) TO POLYETHERS
WITH FUNCTIONAL SIDE CHAINS AND DEGRADABLE
PEG-NANOPARTICLES**

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ABSTRACT

Although polyethylene glycol is a highly established material for a large variety of pharmaceutical and medical applications, copolymerization with functional epoxide monomers still offers a vast range of new materials that preserve the advantageous properties of PEG (aqueous solubility, excellent biocompatibility), but offer new options due to functional side chains. Ultrahigh molecular weight hyperbranched PEG copolymers with up to 2000 hydroxyl groups are accessible by copolymerization of ethylene oxide and glycidol. Such materials are highly biocompatible. PEG bearing multiple catechol moieties is promising in view of its high metal-binding capability and strong surface interaction.