

DSM Science & Technology Awards (SOUTH) 2009	
Name	Frederik Wurm
University	Johannes Gutenberg Universität Mainz
Department	Institut für Organische Chemie
PhD Supervisor	Prof. Holger Frey

Life is branched! Linear Polymers have had a lasting influence on our lives for more than 50 years. However, branched polymers offer tremendous potential for medical or pharmaceutical applications as well as for catalysis. Since 1990, polymer chemists have become interested in dendritic systems (dendros (gr.) = tree) that are omnipresent in everyday life: Branched polysaccharides have been known since the 1930s guaranteeing fast supply of sugars in the human body due to their high number of functional groups at the chain ends. Mimicking nature with artificial, branched polymers and controlling size and molecular weight distribution represents an intriguing challenge. This work presents the first controlled synthesis of highly branched macromolecules attached to a single linear polymer chain, i.e. linear-hyperbranched block copolymers that offer great potential for protein stabilization, nanotube modification and application in electrochemical sensors. The materials are based on biocompatible poly(ethylene glycol) (PEG) and poly(glycerol) or iron-containing organometallic segments.