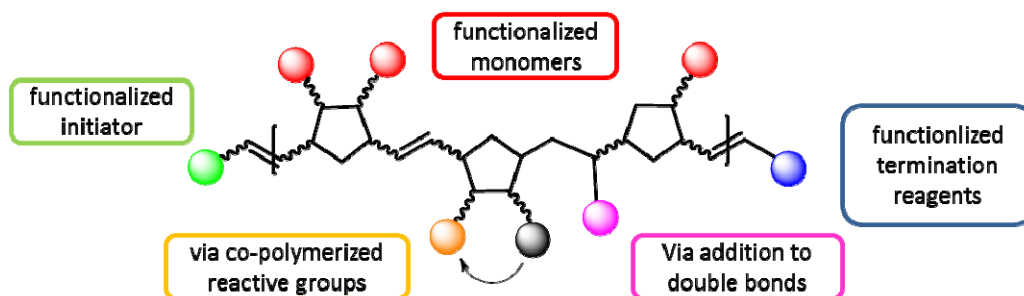


DYE-FUNCTIONALIZED POLYMERS FOR SPECIAL OPTICAL APPLICATIONS PREPARED VIA RING OPENING METATHESIS POLYMERISATION

Gregor Trimmel

Institute for Chemistry and Technology of Materials, Graz University of Technology,
Stremayrgasse 9, 8010 Graz, Austria

This contribution will give an overview on strategies to prepare dye-functionalized polymers via ring opening metathesis polymerization. As recently reviewed [1] and shown in Scheme 1, there are several possibilities for this: First, using functionalized initiators, dyes can be introduced at the beginning of the polymer chain. Secondly, following the most common approach, dye-functionalized monomers are copolymerized allowing a high density of the functionality on the polymer chain. Third, by using designed functionalized termination reagents, the chain ends can be labelled. Fourth, reactive groups can be incorporated either in the initiation, propagation or termination steps and the dye molecule is subsequently introduced in a post-polymerization functionalization approach. Furthermore, the double bonds in the polymer backbone are also available for post-polymerization functionalization.



Scheme 1: routes to dye functionalized-ROMP polymers

As examples, it will be shown that ROMP offers a good control of dye-concentration and the average distance between dye molecules, as well as on the placement on the polymer chain. Finally, polymers with two different dyes can be incorporated within one polymer backbone and thus energy transfer phenomena between these two dyes, e.g. triplet-triplet annihilation, can be tailored by the polymer architecture.