

NOVEL DISULFIDE-CONTAINING MONOMERS FOR DYNAMIC UV-CURED INKS AND COATINGS

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Abstract

Dynamically crosslinked networks containing linear disulfides have attracted a lot of interest due to the high responsiveness of disulfide bonds to plenty of external stimuli, like pH, light, temperature, and redox conditions. The introduction of this type of bonds into acrylic networks allows obtaining a triggerable material that could be used for designing new coatings with tailored properties, such as self-healing and deinking capabilities. In this work, novel acrylic monomers containing disulfide bonds are synthesized and UV-cured, obtaining transparent coatings. The reactivity of the systems is studied by rt-FTIR, demonstrating that the photocleavage of the disulfide bonds can be used as an innovative way to start the photopolymerization reaction, leading to a self-initiated mechanism and avoiding the use of photoinitiators.