Preparation of Responsive Block Copolymer Functionalized Graphene Oxides And Their Temperature Responsive Behavior

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Stimuli-responsive polymers have received a lot of attention as a varied range of application as their properties flexible depending on the environment. Especially, temperature responsive polymer shows drastic change of solubility in given solvent; however, it usually has only one lower critical solution temperature (LCST) and responses to a certain temperature. Herein, we developed a wide range temperature sensor with block copolymers (BCPs) composed of temperature responsive part and fluorescent dye part. A strategy for developing wide range temperature sensor is to design three kinds of BCPs with three different LCSTs, each RGB dye for fluorescent part. Through three BCPs are integrated on Graphene oxide (GO) sheet, the distances between GO and fluorescent dye were controlled independently by three linkers which have different LCST. The GO based wide range temperature sensing system could be applied to various sensor system and promised benefits for use in biological application.