Title (en)

THERMOCHROMIC AND THERMOFLOURESCENT PIGMENTS: ENHANCING COLOR AND FLOURESCENCE WITH ADDITIVES

Title (de)

THERMOCHROME UND THERMOFLUORESZIERENDE PIGMENTE: INTENSIVIERUNG VON FARBE UND FLUORESZENZ MIT ZUSÄTZEN

Title (fr)

PIGMENTS THERMOCHROME ET THERMOFLUORESCENTS: ACCENTUATION DE COULEUR ET DE FLUORESCENCE AU MOYEN D'ADDITIFS

Publication

EP 1889049 A2 20080220 (EN)

Application

EP 06770799 A 20060522

Priority

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- US 68460305 P 20050525

Abstract (en)

[origin: WO2006127569A2] A thermal indicator material and method of producing a material capable of a thermochromic transition upon undergoing a temperature change. The material comprises a plurality of compounds having the following structure: (I) wherein R₁-R₆ = a hydrogen, substituted or unsubstituted alkyl radical, substituted or unsubstituted alkoxy radical, substituted or unsubstituted aryl radical, substituted or unsubstituted thioalkyl radical, substituted or unsubstituted trialkylsilyl radical, substituted or unsubstituted acyl radical, substituted or unsubstituted ester radical, substituted or unsubstituted amine radical, substituted or unsubstituted amide radical, substituted or unsubstituted heteroaryl or substituted or unsubstituted aryl radical n is between 1 and 1000, m is between 0 and 1000, and 1 is between 1 and 1000; with added small molecules, the small molecule additive having the following structure: R-Ar-R' , R-X, linaer alkane, or oligoethylene oxide small molecules with molecular weight less than 1,000 AMU wherein R-R' = a hydrogen, substituted or unsubstituted alkyl radical, substituted or unsubstituted alkoxy radical, substituted or unsubstituted thioalkyl radical, substituted or unsubstituted trialkylsilyl radical, substituted or unsubstituted acyl radical, substituted or unsubstituted ester radical, substituted or unsubstituted amine radical, substituted or unsubstituted amide radical, substituted or unsubstituted heteroaryl or substituted or unsubstituted aryl radical and Ar = a substituted or unsubstituted aromatic or heteroaromatic radical including but not limited to benzene, thiophene, naphthalene, flourene, anthracene, pyridine, indine, biphenyl, phenanthrene, and furan X = a halogen (F, Cl, Br, or I). The thermochromic transition of the material is reversible. The thermochromic transition is a two step transition, such that when the samples are heated above the thermochromic transition temperature followed by a rapid cooling to a temperature below the thermochromic transition temperature in a time of less than about 5 seconds, a new low temperature color is generated which then has an irreversible thermochromic transition.

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