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Stabilized Dye–Pigment Formulations with Platy and Tubular Nanoclays

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Abstract

© 2017 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim Alumosilicate materials of different morphologies, such as platy and tubule nanoclays, may serve as an efficient, protective encasing for colored organic substances and nanoparticles. The adsorption of dyes onto the nanoclays increases their stability against thermal, oxidative, and acid–base-induced decomposition. Natural organic dyes form stable composites with clays, thus allowing for “green” technology in production of industrial nanopigments. In the presence of high-surfac--area alumosilicate materials, semiconductor nanoparticles known as quantum dots are stabilized against agglomeration during their colloid synthesis, resulting in safe colors. The highly dispersed nanoclays such as tubule halloysite can be employed as biocompatible carriers of quantum dots for the dual labeling of living human cells—both for dark-field and fluorescence imaging. Therefore, complexation of dyes with nanoclays allows for new, stable, and inexpensive color formulations.

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Keywords

hybrid pigments, nanoclays, natural dyes, quantum dots

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