

Title: Multifunctional nanopigments and their applications

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From ancient time, the coloring agents, dyes and pigments, are used for various applications like coloration of fabrics, paper, in ink, paint and polymeric films. Due to some common diadvantages of dyes and pigments like poor color fastness, disperse stability, a new generation of pigments known as hybrid pigments has been introduced providing advantages of both previous categories and improving some of their disadvantages. These pigments, also known as dye-clay hybrid nano-pigments or clay based nanopigments.

In present work, the naturally occurring clay minerals (Montmorillonite, Bentonite and Vermiculite) are modified using cationic surfactant through ion exchange method to prepare organo clay. The intercalation and surface interaction of surfactant was confirmed through XRD, FT-IR and zeta sizer. These clay can be further used as adsorbent for removal of dyes using batch extrcation studies at different parameters like pH, contact time and initial concentration of dye solution. The bright colored nanopigments are synthesized in bulk at optimized conditions after extrcation of dyes using naturally occurring clay minerals and organo clay which are further used as colorant to form transparent, bright colored polymeric films. The synthesized polymer films containing clay based nanopigments show more uniform color, transparency and bright color with only 0.035% of dye as compared to pure dye (1% of pure dye in polymer matrix).

Keywords: Nanopigments, Organo clay, Polymric film, Surfactant, Ion-exchange.

Biography

Dr. Neeraj Kumari is currently employed as Assistant Professor in Department of Chemistry, School of Basic and Applied Science, K R Mangalam University, Gurugram India. She did her PhD from University of Delhi, Delhi (India). She has 7 years of experience in teaching and research. Currently, her research area is water remediation and application of magnetic nanomaterials. She has published 7 research papers and book chapters in national and international journals. She was awarded the best paper presentation in the national conference. She is also a life member of the Indian Science Congress.

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