Synthesis and Characterization of hybrid Organic–inorganic near infrared Absorption OV-POSS-Squaraine-amine

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Abstract

Recently Squaraine dye have been receiving the interest of researchers due to its improved solution process ability, scalable synthesis, tunable chemical and physical properties via molecular design and of course its low cost. However, problems of compatibility and wet-ability have limited broad application of Squaraine dye. In this study, we used octavinyl-polyhedral oligomeric silsesquioxane OV-POSS to prevent all these problems and to enhance the dye properties. This is the first time to designed a novel near-IR absorption multifunctional materials over a wide PH (2- 9) with excellent properties of compatibility. A novel system of organic-inorganic hybrids optical material near-IR was prepared by OV-POSS with 6-Bromoquanaldine and Squaric acid to get system1 of (OV-POSS-Squaraine) then reacted with 4-bromaniline to get our last system OV-POSS-Squaraine-amine. Our structure, composition, properties were characterized and evaluated by 1 HNMR spectrum, contact angle and FE-SEM. we believe that the novelty would open new path for more synthesis and applications.

Keywords: OV-POSS-Squaraine-amine, Near-IR absorption, Compatibility, Synthesis and Characterization

