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Quantum Dots for Additive Manufacturing

This experimentation characterises a nanocomposite material to evaluate its suitability for additive manufacturing. The experiment successfully synthesised CdSe quantum dots (QDs) and introduced them (in liquid and solid form) into photopolymer printing media. Suspensions prepared with the addition of QDs in a solvent-based solution showed a decrease in viscosity with an increase in the volume of QDs added. When solid QDs were used, the viscosity of the resulting nanosuspensions remained similar to the pure photopolymer. Moreover, the research demonstrated the feasibility of "3D printing" the suspension by manually curing the photopolymer with UV light. These results indicate that the cure depth of the resulting samples does not depend on the loading of the QDs at the low concentrations tested. Also studied the stability of these nanosuspensions over time by evaluating their physical properties such as surface tension, viscosity, and cure depth.

Speaker Biography

Dhanesh G Mohan is a licensed Professional Engineer (P.E), Chartered Engineer (C.Eng), writer and educator. He is a Postdoctoral Research Fellow of the Institute of Materials Joining at Shandong University, Jinan, China. Dhanesh received his PhD in Mechanical Engineering from Anna University, Chennai, India. He authored two books titled "Additive Manufacturing for High Entropy Alloys" and "Advances in Friction Stir Welding", considered to publish by Springer Nature and Taylor and Francis (CRC Press). His research mainly focused on Additive Manufacturing (3D printing of high entropy alloys, 3D composites and ceramics printing, and big area additive manufacturing), Surface coating methods, fabrication of high entropy alloys, Corrosion studies, Quantum dots, and Hybrid friction stir welding methods (Laser-assisted FSW, Ultrasonic vibration-assisted FSW, Induction assisted FSW and FSP).

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