Design and Development of Flexible UV Band-Pass Filter for Laser Applications

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We introduce a novel strategy for the design and development of silver/polycarbonate (Ag/PC) nanocomposite flexible films having micron size thickness using modified solution cast−thermal evaporation method. Structural characterizations confirmed the good crystallinity with cubic phase of Ag nanoparticles in PC films. Further, micro-structural studies of nanocomposite films were also investigated by transmission electron microscopy, which confirmed that the metal fraction is in the form of fractals. Moreover, the plasmonic fluorescence mapping insures to the uniform distribution of Ag NPs throughout Ag/PC nanocomposite films. The unique narrow transmittance at 320 nm is observed due to the absorption edge of PC and Ag metal fractals in the nanocomposite films. Finally, the obtained transmittance spectral features of this nanocomposite film provides its best suitability for the applications of band-pass filter at 320 nm UV range, which is commercially required for a HeCd laser.

Biography

Garima Kedawat has completed his PhD at the age of 29 years from Rajasthan University and doing postdoctoral studies from CSIR- National Physical Laboratory, New Delhi, India. She has published more than 20 papers in reputed journals.

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