



Contribution ID: 42

Type: Oral

Excimer Fluorescence of Acriflavine Dye in Glycerol and Ethylene Glycol

Abstract

This study explores the excimerization of acriflavine dye in ethylene glycol and glycerol solvents. Acriflavine, a member of the acridine dye family, is well-known for its distinctive fluorescence capabilities, which are used in cellular imaging, nucleic acid analysis, and dye laser active media. The study investigates the effect of solvent environment, dye concentration, and pH on acriflavine emission properties, focusing on excimer production and its implications for photonic applications. UV-visible absorption spectroscopy reveals concentration-dependent absorption characteristics represented by different monomer bands. Steady-state fluorescence studies demonstrate that at increasing concentrations in both solvents, red-shifted excimer bands appear. Temperature-dependent studies imply that excimer production is regulated by dynamic diffusion. Time-resolved fluorescence spectroscopy verifies the singlet character of both monomeric and excimeric states, offering mechanistic insights into the excimerization process. Critical concentrations are established, indicating the equilibrium between the monomer and excimer populations. Furthermore, pH-dependent spectrum changes demonstrate the importance of acidity in influencing fluorescence characteristics. Overall, this study gives a thorough knowledge of acriflavine excimerisation in viscous solvents, with the potential to increase its performance in dye laser technologies and other applications.

Authors: SWARGIARY, HIREN (EASTERN KARBI ANGLONG COLLEGE); Mr CORRESPONDING AUTHOR, Simanta Hazarika (Gauhati University)

Presenter: SWARGIARY, HIREN (EASTERN KARBI ANGLONG COLLEGE)

Track Classification: Track 03: Material Science & Nano-science, Quantum Thermodynamics & Statistical Physics