SJSU | DEPARTMENT OF CHEMISTRY

CHEMISTRY Departmental Seminar

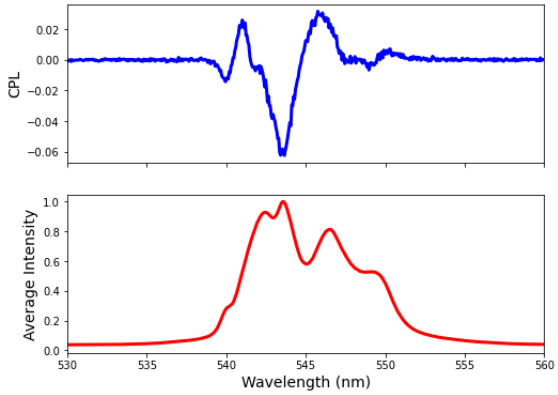
Spring 2022
CHEM 285/191 Schedule
Tuesday at 4:30-5:45PM

February 8th, 2022

Dr. Todd Hopkins
Butler University

Chiral Solvent Discovery: Deep Eutectic Solvents for Circularly Polarized Luminescence Applications

A deep eutectic solvent (DES) is a mixture of two or more solids that have a melting point depressed below that of an ideal mixture. This depression of the melting point is the result of strong intermolecular interactions such as hydrogen bonding. The properties of a DES can be controlled based on the choice of components used in the mixture, which allows the design of new chiral solvents simply by using chiral molecules as part of the DES. This presentation describes the development of chiral DES to use in circularly polarized light emitting materials. DES are prepared by combining achiral hydrogen bond acceptors (HBA), such as tetrabutylammonium chloride and thymol, with chiral organic hydrogen bond donors (HBD). Luminescent lanthanide (Eu, Tb, and Sm) complexes are dissolved in the chiral DES, and the solvation interaction induces a circularly polarized luminescence (CPL) spectrum. The sign and magnitude of the CPL depends on the structure and handedness of the chiral HBD of the DES, but the achiral HBA and the molar ratio of components in the DES also play a significant role.



Average luminescence and CPL spectrum of the $^5D_4 \rightarrow {}^7F_5$ transition of $Tb(dpa)_3^{3-}$ dissolved in 1:2 tetrabutylphosphonium chloride:D-leucinol eutectic mixture.

Zoom link: https://sjsu.zoom.us/j/84626719622

Please RSVP at https://forms.gle/QuLDzNBJcKNJXjwK6 if you're not enrolled in Chem 285 or Chem 191

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