Electronic Supplementary Information (ESI) for

Tunable disruption of pseudoisocyanine J-aggregates by choline chloride-based deep eutectic solvents

Moumita Saha,[a] Juhi Saraswat,[b] Gary A. Baker,[c] Kamalakanta Behera,*[d] and Shruti Trivedi*[a]

[a] Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi, 221005, India

[b] Centre for Interdisciplinary Research in Basic Sciences, Jamia Millia Islamia, New Delhi, 110025, India

[c] Department of Chemistry, University of Missouri, Columbia, Missouri, 65211, United States

[d] Department of Chemistry, University of Allahabad, Prayagraj, 211002, India

***Corresponding Author**

Dr. Shruti Trivedi

Email: shrutitrivedi@bhu.ac.in

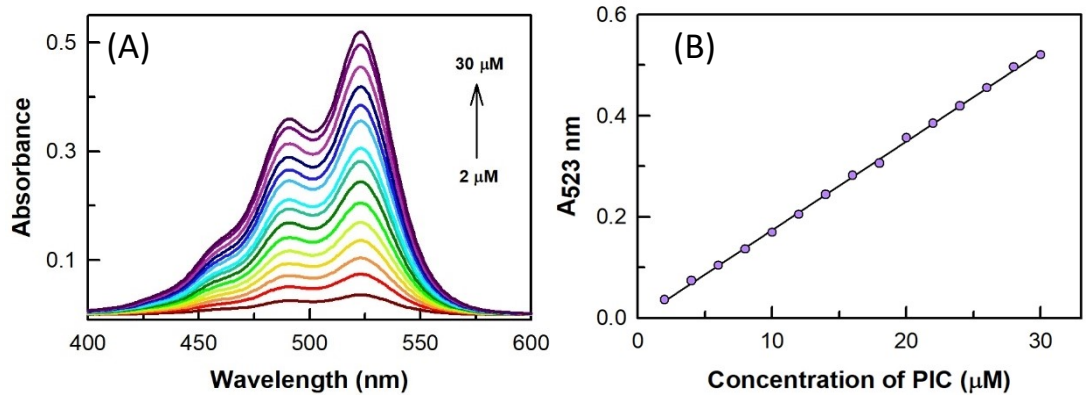

Fig. S1 (A) UV–Vis absorbance spectra of PIC in water at concentrations ranging from 2–30 μM. (B) Plot of absorbance at 523 nm versus PIC concentration, showing a rigorously linear increase consistent with Beer–Lambert law behavior and maintenance of the monomeric form of PIC over this concentration range. The recovered molar extinction coefficient obtained from the linear fit shown is 18,500 M^{-1} cm^{-1}.

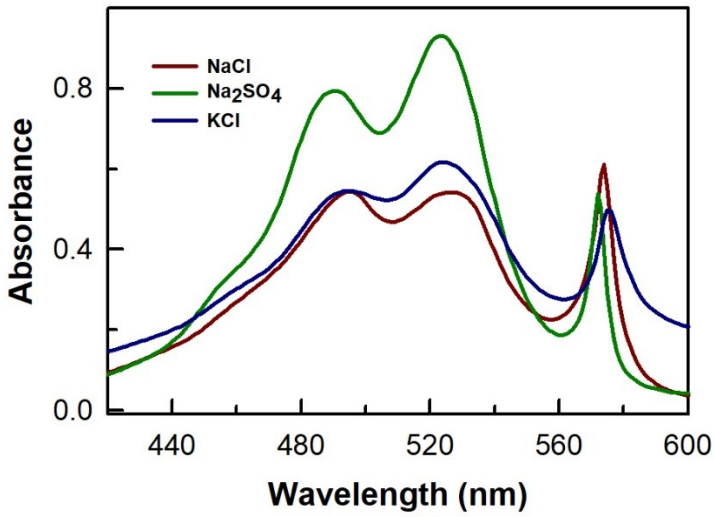

Fig. S2 Absorbance spectra of 300 μM PIC in aqueous solutions containing 5.0 M NaCl, 1.5 M Na_2SO_4, and 2.5 M KCl, illustrating the emergence of the characteristic sharp J-aggregate band near 574 nm in high ionic strength media.

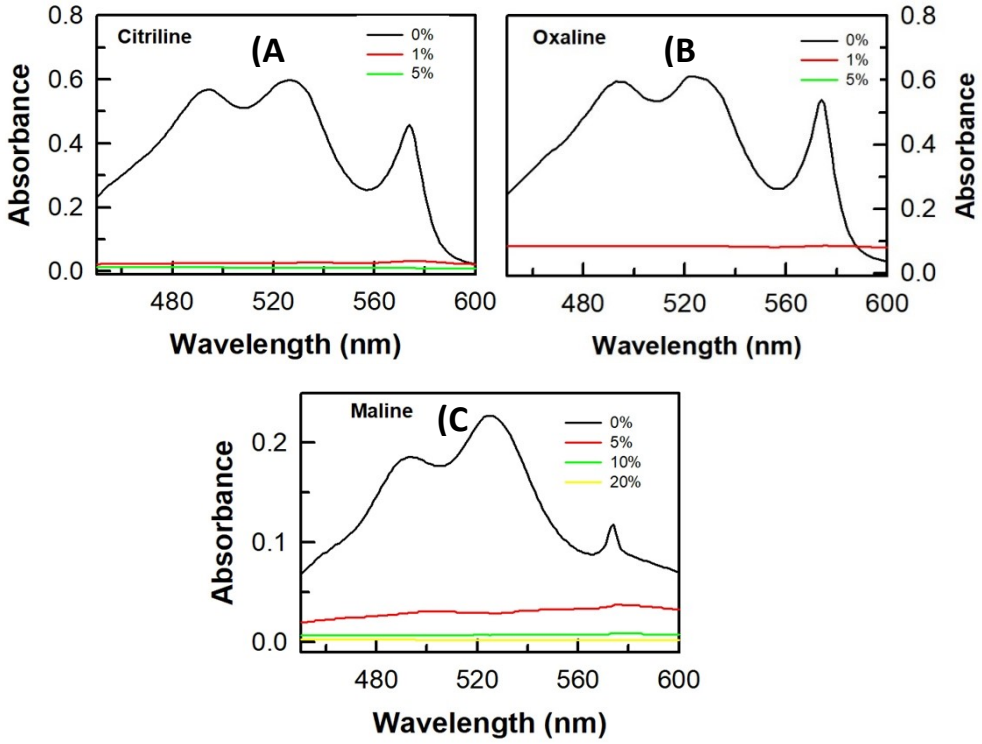

Fig. S3 Absorbance spectra of 300 µM PIC in 5.0 M NaCl in the presence of varying percentages (v/v) of (A) Citriline, (B) Oxaline, and (C) Maline. The addition of these DESs results in a marked decrease in overall absorbance intensity, consistent with either precipitation or chemical degradation of PIC under these conditions.

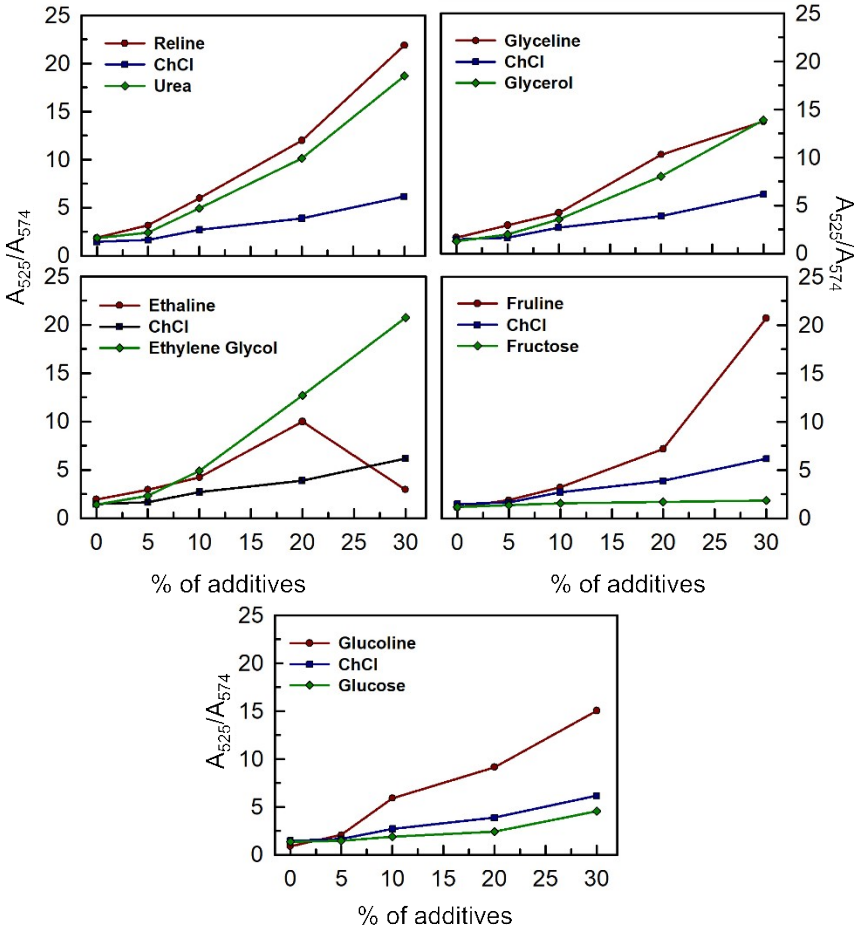

Fig. S4 Variation in ratio of absorbance at 525 nm and 574 nm peak of PIC by addition of various % of DESs and their individual components.

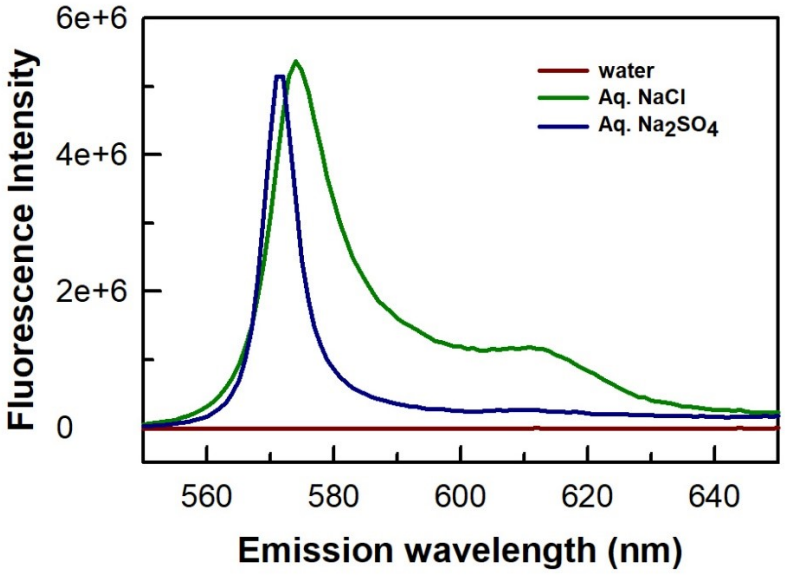

Fig. S5 Fluorescence emission spectra of 100 µM PIC in water and in 5.0 M NaCl (*aq*), together with 300 µM PIC in 1.5 M Na_2SO_4 (*aq*), highlighting salt- and concentration-dependent variations in emission behavior.

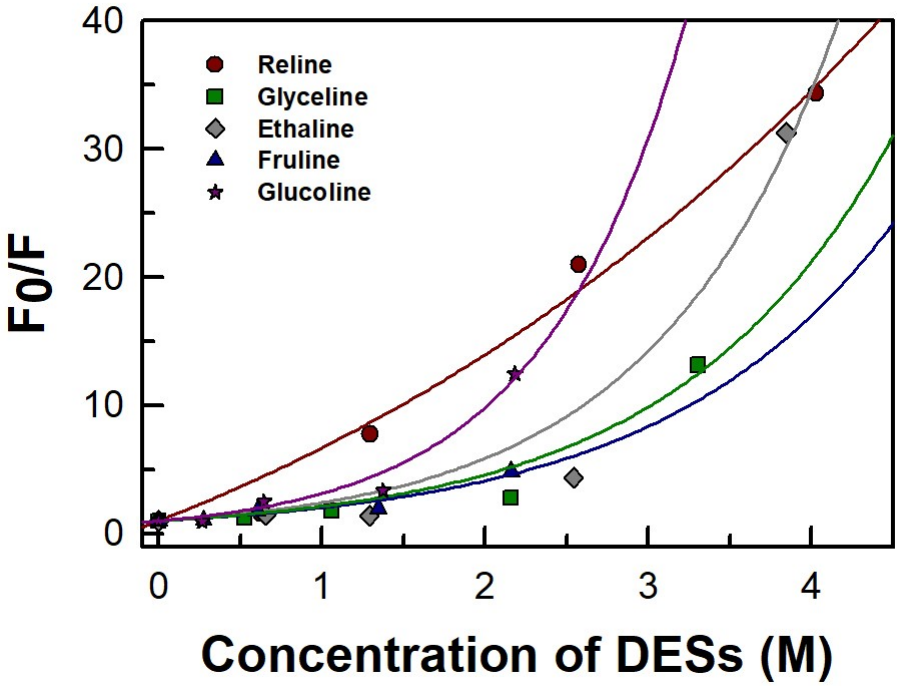

Fig. S6 Stern–Volmer plots (F_0/F versus DES concentration) illustrating progressive quenching of PIC fluorescence in 5.0 M NaCl (*aq*) upon addition of the indicated DESs. The pronounced upward curvature in the Stern–Volmer plots prompted analysis within a “sphere of action” static quenching model.

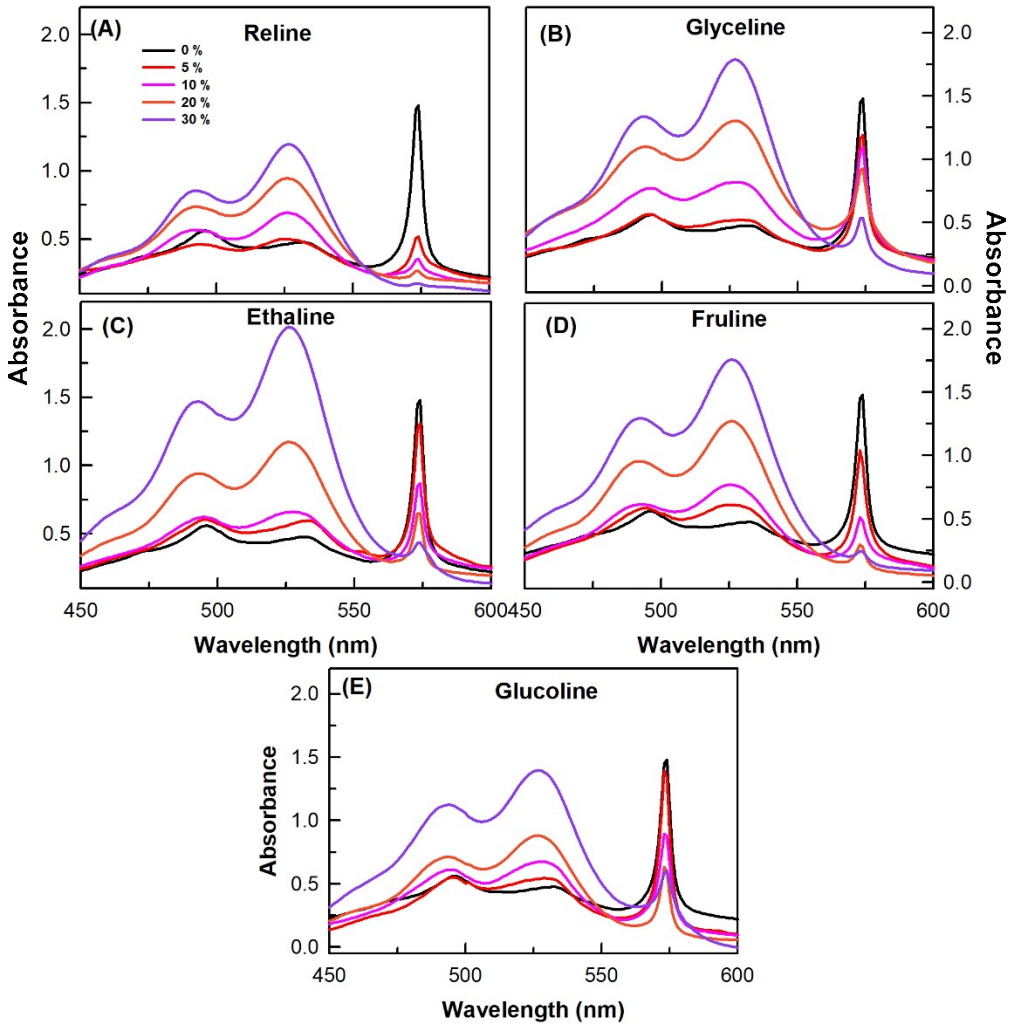

Fig. S7 Absorbance spectra of 300 µM PIC in aqueous 5.0 M NaCl containing varying percentages (0 to 30%, v/v) of (A) Reline, (B) Glyceline, (C) Ethaline, (D) Fruline, and (E) Glucoline, recorded at 10 °C.