

Tuning photophysical properties via guest inclusion in an organic salt

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A supramolecular organic salt composed of a biphenylic acid molecule and a nitrogen-containing monobasic compound was found to act as a host system for inclusion of aromatic guest molecules such as anthracene, 9-anthraldehyde and phenanthrene. Crystal structures of these complexes were analysed to understand network geometris, host-guest ratio, position of the guest molecules etc. In spite of having no suitable void spaces in the host system, the aromatic guest molecules were able to enter into the host system due to spatial rearrangement of the host components. It was observed that different colored-complexes were obtained for different guest-included salts which indicate that the host organic salt can act as a colorimetric indicator to recognize these guest molecules. Besides hydrogen bonding interactions, strong n-n and cation-n interactions played key role for holding the guest molecules into the host system. Various colors of these guest-included complexes can be evinced from extent of charge transfer or cation-n interactions in these complexes. In order to study their photophysical properties, diffuse reflectance spectral studies and luminescence studies with lifetime measurements were carried out in solid state. These experiments clearly imply their distinctive photophysical properties.

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Keywords: [Host-guest chemistry](#), [Colorimetric indicator](#), [Photophysical properties](#)