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## Abstract

Porphyrins are tetrapyrrolic macrocycles composed of four pyrrole subunits connected via methine bridge. This conjugated system consists of twenty two pi-electrons, out of which eighteen contributes in aromaticity. Due to their extended conjugation, they show an intense absorption spectrum in visible region. Moreover, the presence of four meso and eight beta-positions make them tunable. So, the photophysical properties of these compounds can be tuned either by substituting aromatic moieties at meso or beta-position or by the insertion of metal in the inner core of porphin ring. In this research work, the photophysical properties of substituted porphyrins was analyzed. The zinc complexes of respective porphyrins were also synthesized and observed spectrophotometrically. Different analytical techniques, for example Gas Chromatography-Mass Spectrometry (GC-MS), Nuclear Magnetic Resonance Spectroscopy (NMR), was used for characterization of synthesized compounds while, UV-Visible spectrophotometry, and photoluminescence spectrophotometry (PL) was used for the study of photophysical properties of synthesized substituted porphyrins. The experimental results shows that the photophysical properties of a particular porphyrins obviously depends upon the substituent attached with the meso-phenyl group of porphyrins. While in case of Schiff bases, the secondary substituent provides a least electronic effect on the photophysical properties of porphyrins. The insertion of metal results in the reduction of two Q-bands in near infrared region.