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Photophysical, photochemical and fluorescence quenching studies of new halogenated phthalocyanine metal complexes

Safaa H Ali*[a], Aqeel Q Kareem[b] & Saher A Ali[b]

[a] Department of Physiological and Chemistry, College of Veterinary Medicine, Al-Shatrah University, 64007 Al-Shatrah, Iraq
[b] Department of Chemistry, College of Science, University of Thi-Qar, 64001 Al-Nasyrria, Iraq
E-mail: safaa.ali@shu.edu.iq

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This study provides an accurate description of the preparation of some new quad-compensatory phthalocyanine complexes of Zn(II) and Cu(II) substituted by 4-(4-bromo-2-formylphenoxy). Several spectroscopic techniques have been employed to characterize phthalocyanine metal complexes including FT-IR, NMR, mass spectrometry, and UV-Visible spectrophotometry. Aggregation studies have been investigated in various DMSO concentrations ranging from 2×10^{-6} M to 10×10^{-6} M. In this research, the bathochromic shift of the Q band of [Zn(Pc)] depends on the solvent type in the following ascending order: (THF< DMF< $CHCl_3$< DMSO and H_2SO_4), and for [Cu(Pc)] is (THF< DMSO< DMF< $CHCl_3$ and H_2SO_4) respectively. Photophysical properties of the resulting complexes have been evaluated by measuring factors such as absorption and emission. Spectral results show that both complexes **2** and **3** have the potential to be used as sensitizers in photodynamic therapy (PDT) based on their singlet oxygen efficiencies (UD = 0.41, 0.39).

Keywords: Metal complexes, Phthalocyanine, Photophysical, Photochemical, PDT

Over the past decade, phth