ABSTRACT

The photophysicochemical behavior of symmetric and asymmetric zinc phthalocyanines, surface assembled onto gold nanotriangles

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The synthesis of a novel asymmetric phthalocyanine, (4-(4-(benzo[d]thiazol-2-yl)phenoxy)-2,10,17- tris(4-(2-carboxyethyl)phenoxy)phthalocyaninatol)zinc(II), complex 3, is reported. Complex 3 together with the previously reported complexes tetrakis[(benzo[d]thiazol-2-yl phenoxy)phthalocyaninato]zinc(II) (4) and 3-(4-((3,17,23-tris(4-(benzo[d]thiazol-2-yl)phenoxy)phthalocyaninatol)oxy)phenyl)propanoic acid zinc(II) (5), were linked to gold nanotriangles (AuNTs) through S–Au/Au–N self-assembly to afford the conjugates (3-AuNTs, 4-AuNTs and 5-AuNTs). The photophysicochemical behaviour of the complexes and their conjugates were studied. The asymmetric complexes 3 and 5, displayed improved triplet and singlet oxygen quantum yields compared to the symmetric complex 4, while all conjugates displayed improved triplet and singlet oxygen quantum yields compared to their respective complexes alone. The complexes and their conjugates could serve as good candidates for photodynamic therapy.