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## An optical limiting study in aminophenoxy substituted phthalocyanine in the presence of semiconductor quantum dots

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### Abstract

The synthesis of 4-*bis*(4-aminophenoxy)phenoxy derivatized phthalocyanine containing In (complex **2**), and Ga (complex **3**), and the previously reported complex **4** (containing Zn) and their covalent attachment to glutathione (GSH) functionalized cadmium telluride quantum dots (CdTe QDs) are reported in this work. Additionally, their photophysical, energy transfer and nonlinear optical properties were investigated. The covalently linked derivatives showed lower fluorescence quantum yield with corresponding higher triplet quantum yield. Quenching of the photoluminescence intensity of the CdTe QDs was observed to be due to energy transfer from the QDs to phthalocyanine (Pcs) molecules. The reverse saturable absorption nonlinear optical response was found to be predominantly dependent on the excited state absorption. The observed limiting threshold ranges from 0.04–0.62 J/cm<sup>2</sup>.

**Key word:** Optical limiting, phthalocyanine, quantum dots, photophysics.

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