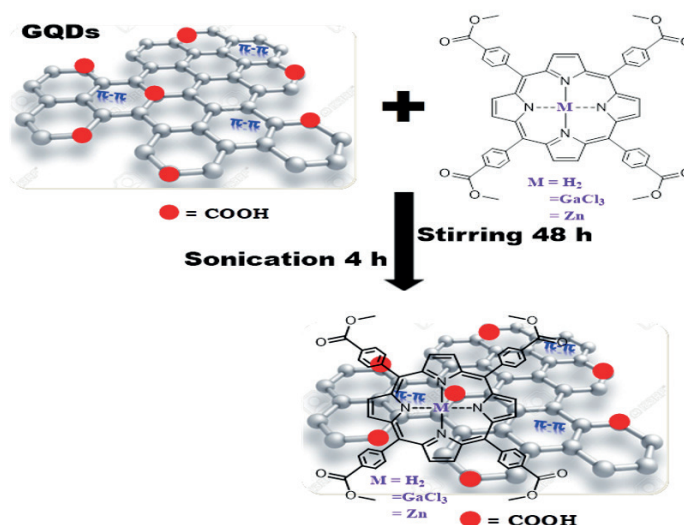


# PHOTOPHYSICAL PROPERTIES AND PHOTODYNAMIC THERAPY ACTIVITY OF MESO-TETRA(4-CARBOXYPHENYL) PORPHYRIN TETRAMETHYL ESTER-GRAPHENE QUANTUM DOTS CONJUGATE

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There has been a high interest in improving cancer treatments due to high morbidity and mortality that is often associated with cancer. Among the emerging cancer therapy, photodynamic therapy (PDT) surpasses the traditional methods.<sup>1</sup> Porphyrins have received great attention as the first and second generation of photosensitizer for PDT because of their effective singlet oxygen ( $^1O_2$ ) generation ability, low toxicity and their aromaticity.<sup>2,3</sup> Various nanocarriers have been actively developed for porphyrins in order to enhance their physicochemical applications where cellular uptake have limited their broad application. An example of these nanocarriers are graphene quantum dots (GQDs). GQDs are well known PDT agents with high singlet oxygen quantum yields.<sup>2,3</sup>



Representation of the interaction between porphyrins and GQDs.

This work reports on novel metal meso-tetra(4-carboxyphenyl) porphyrin tetramethyl ester derivatives when non-covalently linked to GQDs through strong  $\pi$ - $\pi$  stacking. Combining the two PDT agents (porphyrins and GQDs) is expected to improve PDT through synergistic effect.

## References

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