

# CONCENTRATION QUENCHING OF ZINC-PHTHALOCYANINE IN THIN FILMS

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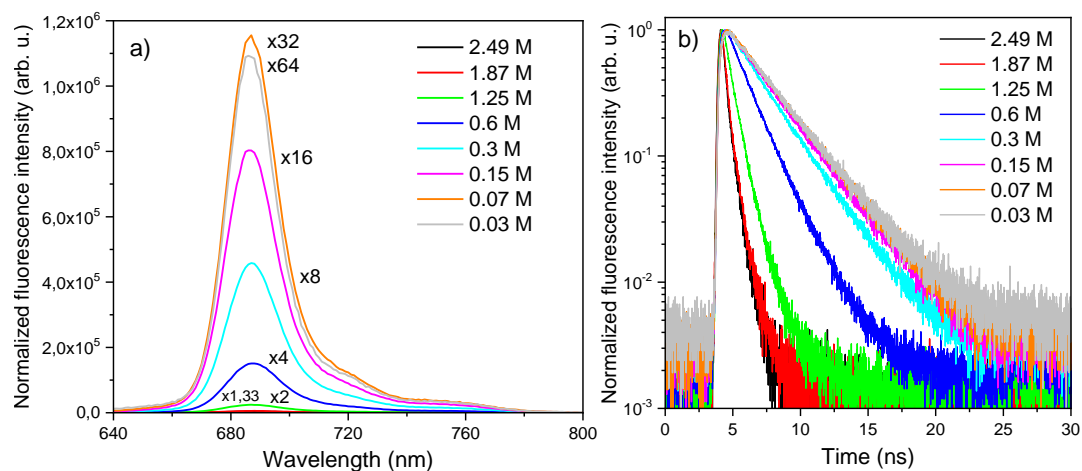
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Sharply decreased emission intensity with increasing fluorophore concentration is known as concentration quenching, or aggregation-induced quenching [1], which tends to reduce fluorescence quantum yield [2]. This effect occurs in many systems from biology to optoelectronics [1, 3], and it may adversely affect the operation of the latter systems or devices.

In this study, Zinc 2,9,16,23-tetra-tert-butyl-29H,31H-phthalocyanine (TB-ZnPC) concentration quenching of thin films in toluene is investigated. These molecules are being used in diverse fields for their peculiar properties [4, 5], and, having a comparable structure to chlorophylls, they are applied as model systems. Experimental results in Fig. 1a show TB-ZnPC fluorescence spectra normalized to 2,49 M concentration where aggregation-induced quenching and fluorescence intensity decrease upon increasing concentration can be clearly seen. The same trend in Fig. 1b demonstrates fluorescence decay kinetics of 690 nm band getting faster.



**Fig. 1.** a) Fluorescence spectra of TB-ZnPC thin films in toluene normalized to 2,49 M; b) Fluorescence decay kinetics of the 690 nm band of fluorescence spectra in panel a.

## References

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