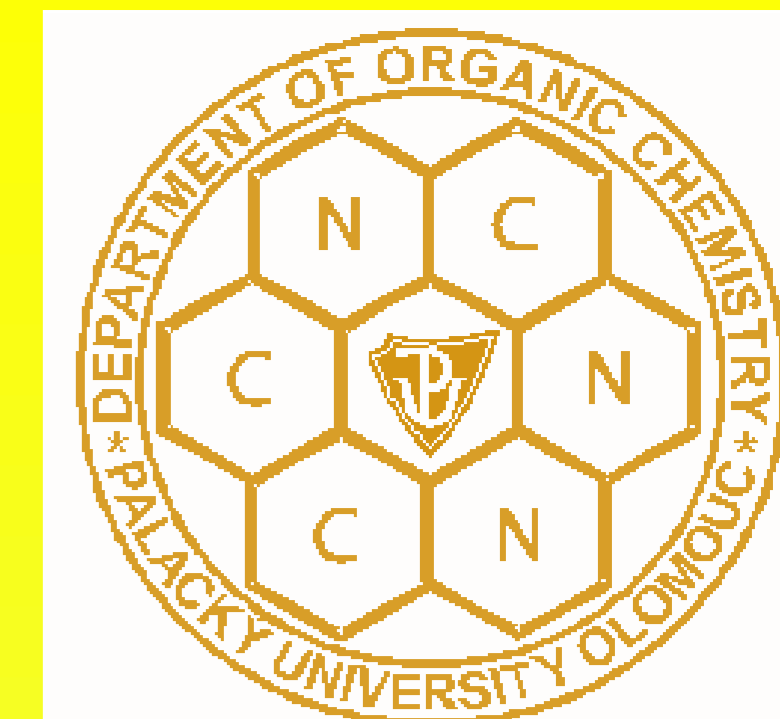




# Novel rhodamine based fluorescent systems developed by combinatorial approach with application of solid-phase synthesis



Kamil Motyka\*, Lucie Brulíková, Maitia Labora, Jan Hlaváč and Martin Mistrík

Department of Organic Chemistry, Faculty of Science, Institute of Molecular and Translational Medicine, Palacký University, 17. listopadu 12, 771 46 Olomouc, Czech Republic

Email: motyka@orgchem.upol.cz

For synthesis of novel rhodamine based fluorescent systems a combinatorial approach with application of solid-phase synthesis was utilized. The precise design of the appropriate fluorescent system is difficult to set up and therefore several similar compounds have to be synthesized. For this reason high-throughput methods for preparation of chemical libraries for selection of suitable candidates for further development of new fluorescent systems are being developed. The fluorescent systems consisted of rhodamine as the fluorescent dye, linker and central group (formed by 4,6-dichloro-5-nitropyrimidine that bears the possibility to bind three different substituents). The structure changes of central part can be predicted to have different excitation/emission properties.

## pH dependence

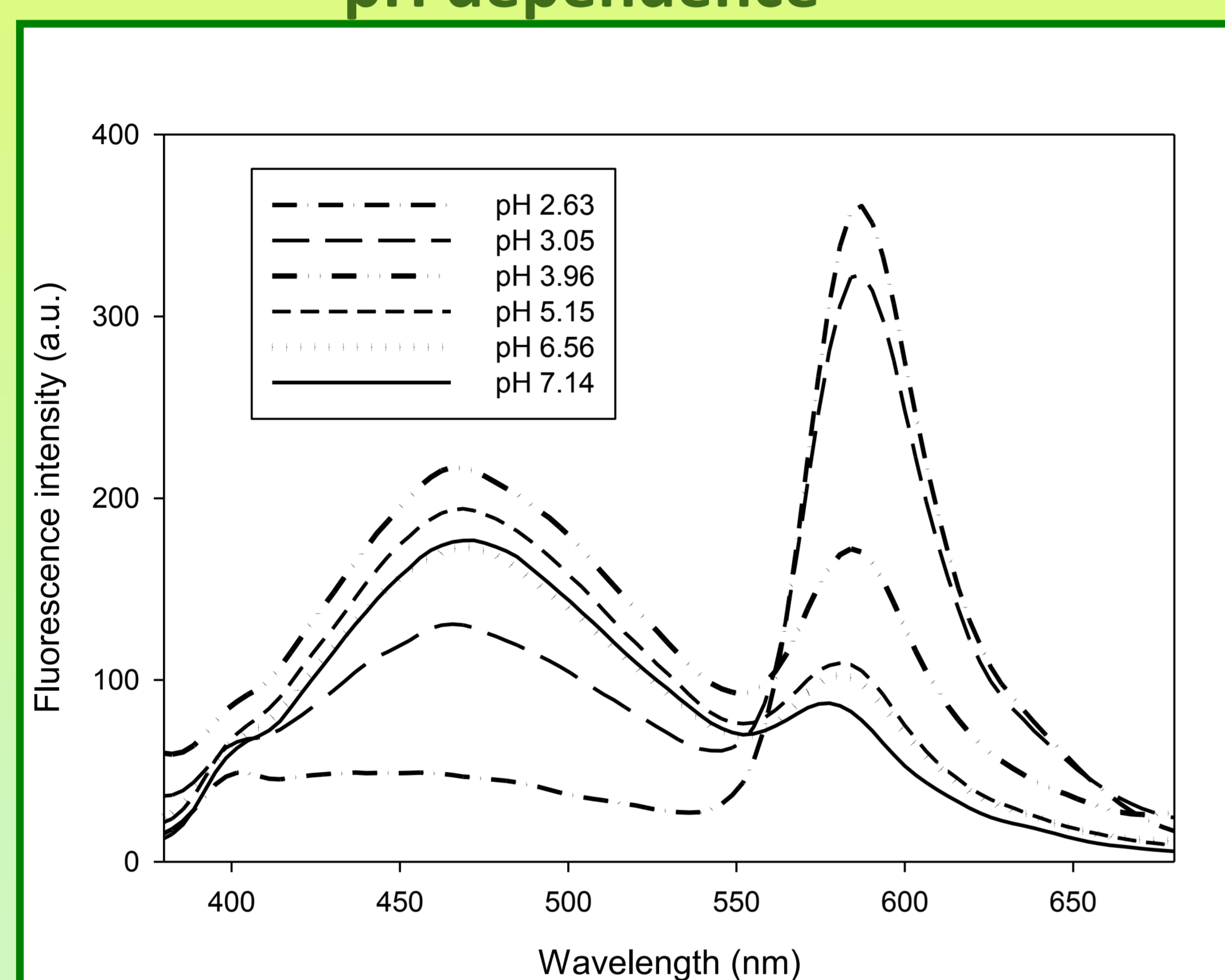


Figure 1: Emission spectra at different pH values. (for compound SL240B, Scheme 1: R<sup>1</sup> = Phe-β-Ala-OH; R<sup>2</sup> = H).

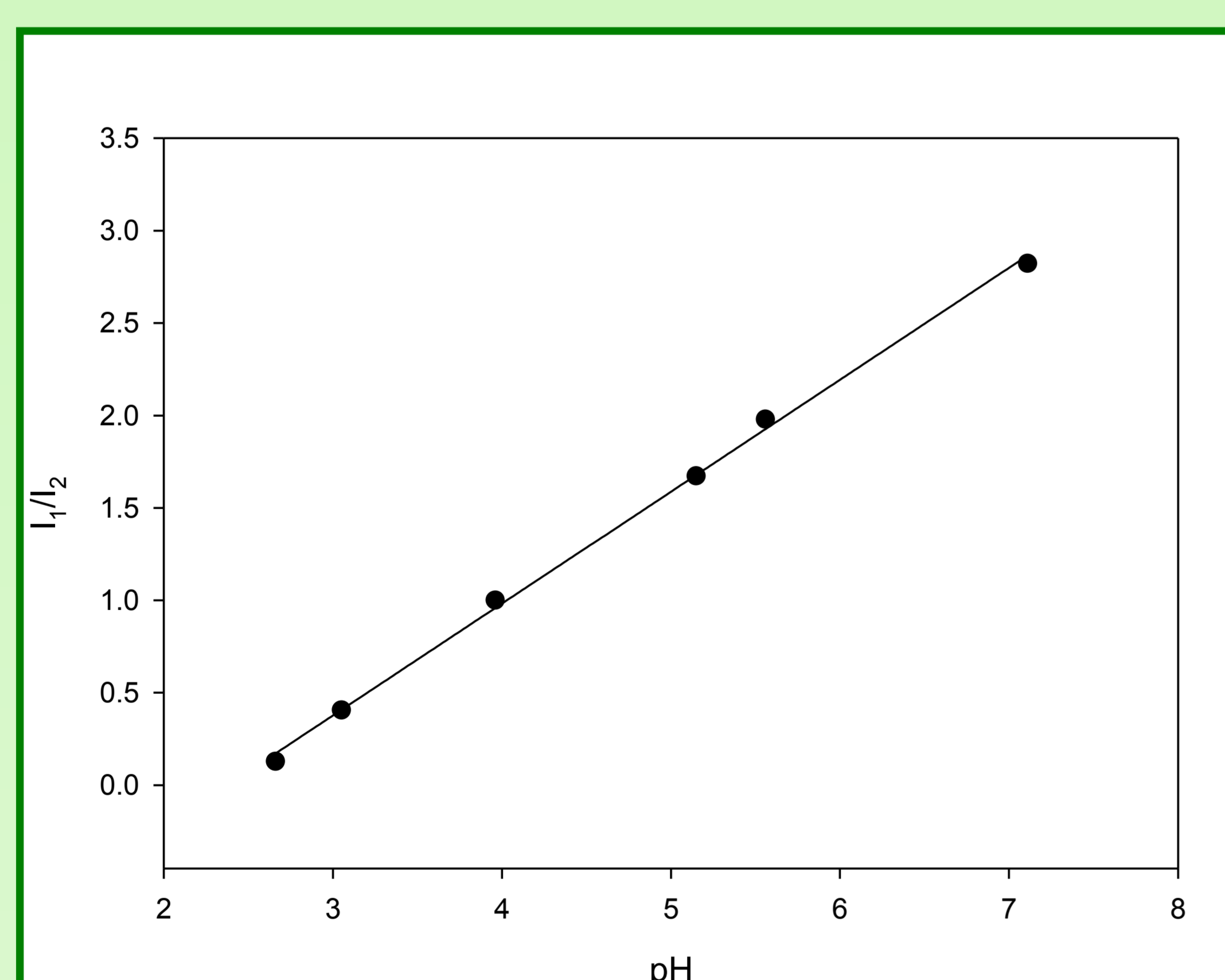


Figure 2: The dependence of the ratio of fluorescence intensities at local maxima on pH (compound SL240B, fluorescence emission measured at 465 and 590 nm).

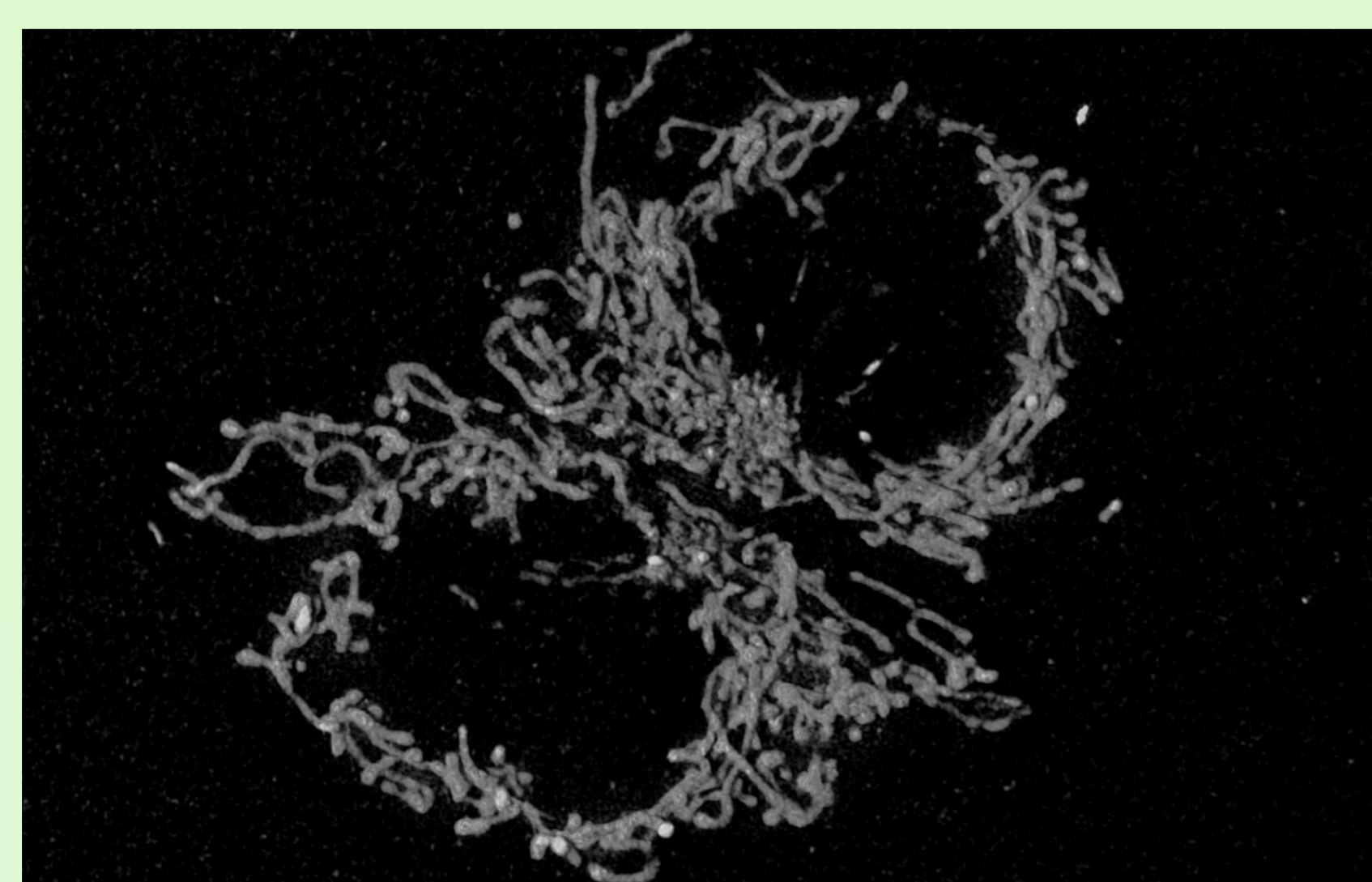
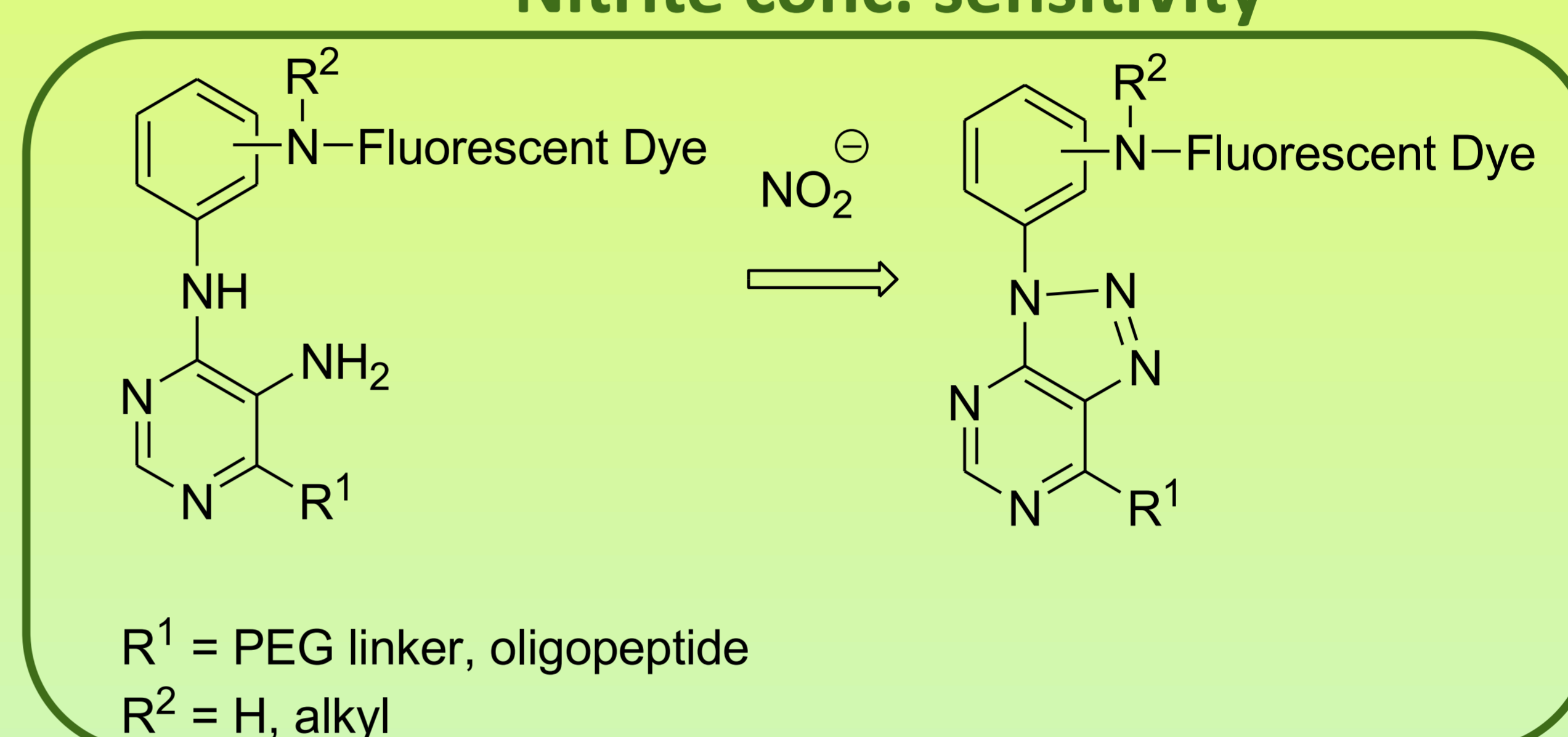


Figure 5: The compound SL240B as potential mitochondrial stain.

## Nitrite conc. sensitivity



R<sup>1</sup> = PEG linker, oligopeptide  
R<sup>2</sup> = H, alkyl

Scheme 1: General structure of studied compounds and supposed nitrite sensitivity mechanism.

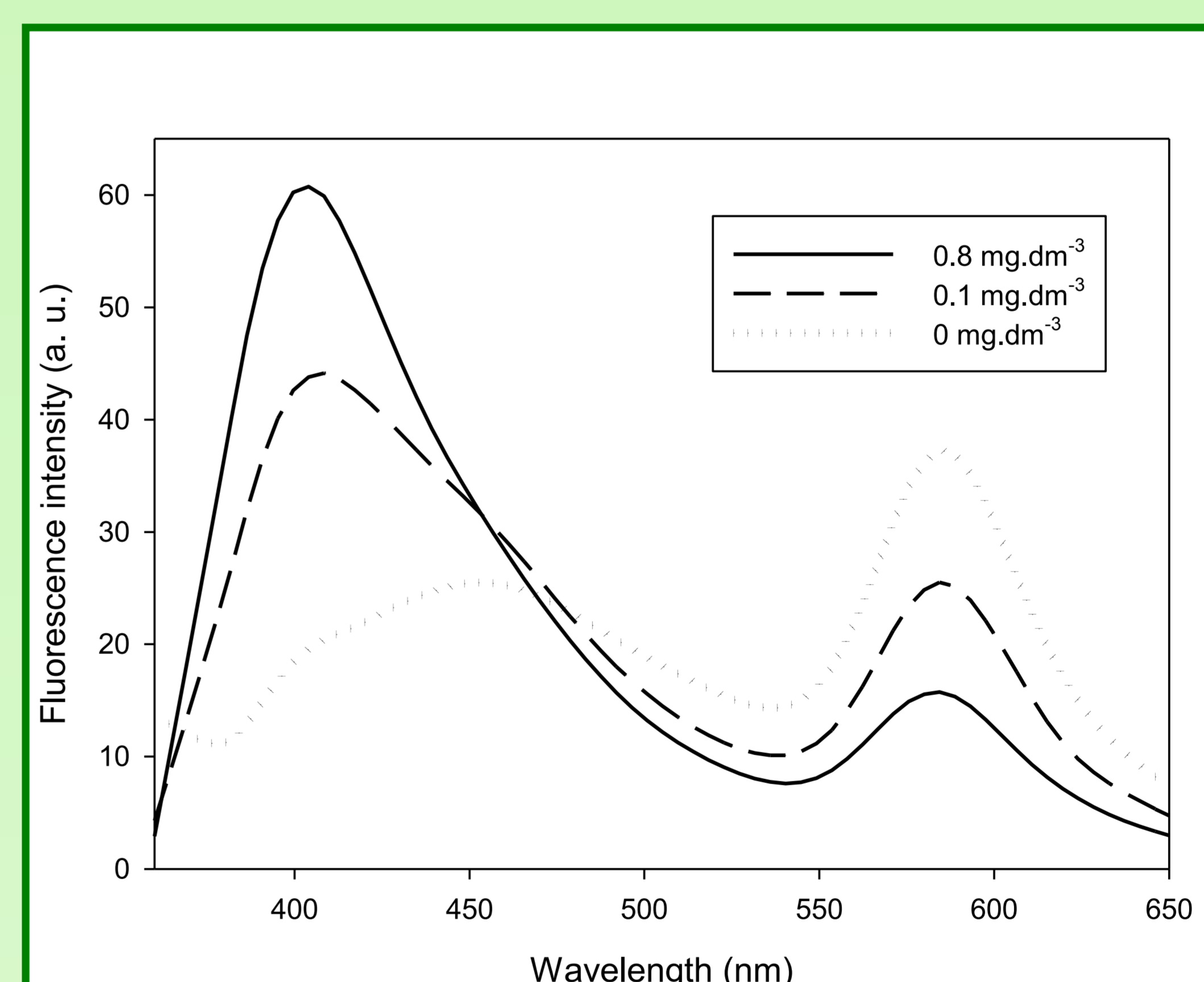


Figure 3: Emission spectra at different nitrite concentration in water (compound SL240B).

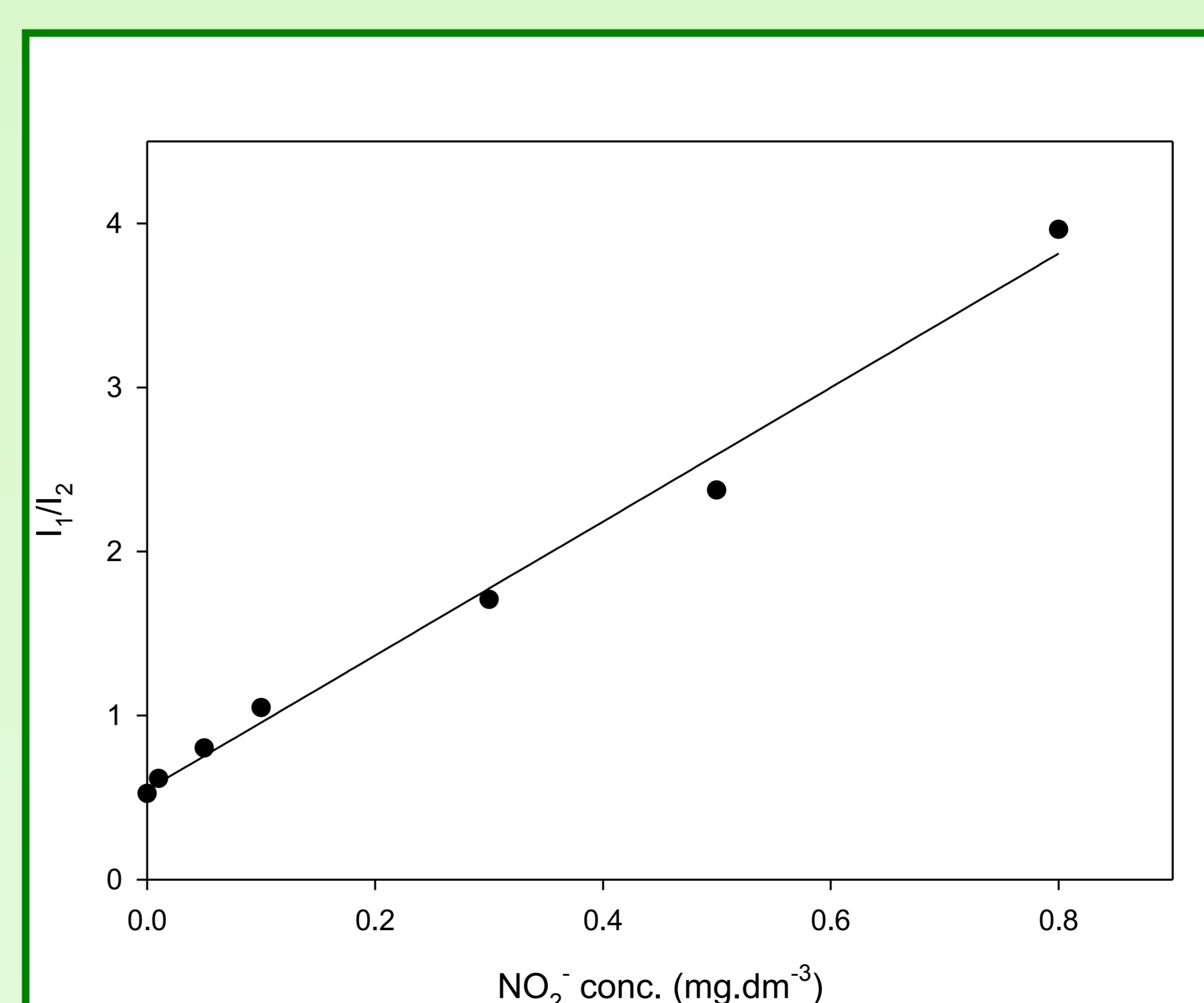


Figure 4: The dependence of the ratio of fluorescence intensities at local maxima on nitrite concentration (compound SL240B, fluorescence emission measured at 415 and 590 nm).