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Triazolyl Purine Derivatives as Amorphous Fluorescent Materials

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Earlier we reported the synthesis of fluorescent purine nucleosides.¹ Currently we have developed the conditions for the synthesis of purine derivatives with 1,2,3-triazoles at C(6) and C(2) positions. Various combinations of electron-donating and electron-withdrawing groups were used for the functionalization of purine core to study how the structure influences photophysical properties. Trityl group containing substituent at N(9) position of purine provided amorphous properties.²

The synthetic routes for various C(6) and C(2) substituted purine derivatives were designed and the final products were obtained with 11–54% overall yields over 4 or 5 steps. The photophysical properties of target compounds were studied in DCM solution and in the thin layer film, and fluorescence with emission maxima corresponding to blue or deep violet light were observed. Quantum yields in DCM solution reached up to 91% and in the thin layer films up to 59%.

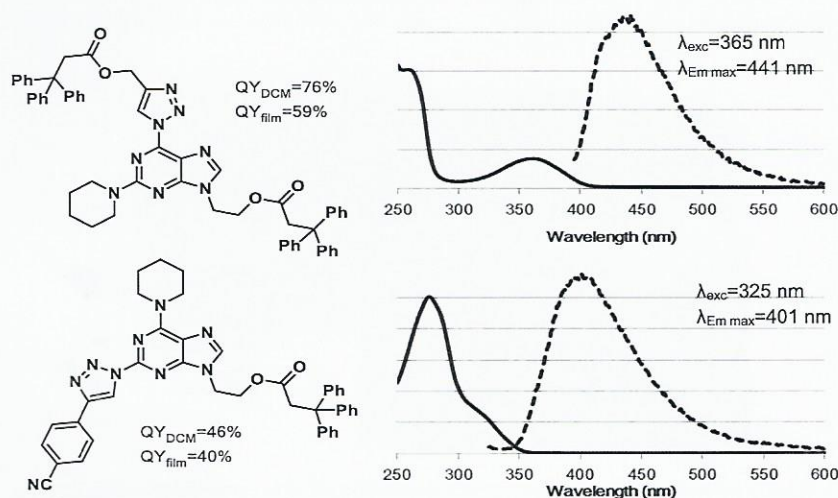


Figure 1: Representative target compounds and their absorption-emission spectra in DCM solution (solid lines - absorption spectra, dashed lines - emission spectra).

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