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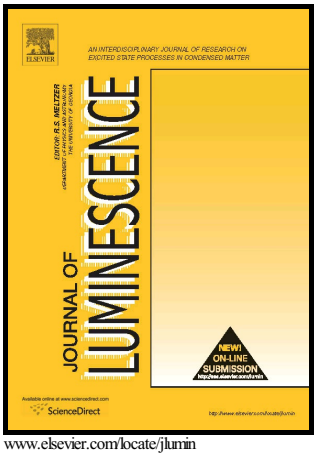

www.elsevier.com/locate/jlumin

PII: S0022-2313(15)30241-6
DOI: http://dx.doi.org/10.1016/j.jlumin.2016.03.028
Reference: LUMIN13906

To appear in: *Journal of Luminescence*

Received date: 13 July 2015
Accepted date: 19 March 2016

Cite this article as: Hassan A. Azab, Gasser M. Khairy, N. Abd El-Ghany and Marwa. A. Ahmed, Time-resolved fluorescence sensing of N-acetyl amino acids Nucleobases, Nucleotides and DNA by the luminescent Tb (III) - 8-alkyl-2-Oxo 2H-chromene-3-carbaldehyde probe, *Journal of Luminescence* http://dx.doi.org/10.1016/j.jlumin.2016.03.028

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Abstract

A time-resolved (gated) luminescence-based method for the detection of some of N-acetyl amino acids, nucleobases, nucleotides, and DNA in microtiterplate format using terbium- 8-alkyl-2-Oxo-2H-chromene-3-carbaldehyde (AOCC) complex in 1:2 metal: ligand ratio in microtiterplate format has been evolved. The linear range for determination of the selected biomolecules is 0.1–1.0 µM. The detection limit was in the range of 0.0371 - 0.106 µM. The thermodynamic parameters, and binding constants (K) of N-acetyl amino acids, nucleobases, nucleotides with Tb (III) –(AOCC) $_2$ complex were calculated. Positive and negative values of entropy (ΔS) and enthalpy (ΔH) changes for Tb (III) –(AOCC) $_2$– N-acetyl amino acids, nucleobases or nucleotides ternary complexes were evaluated. Selectivity of Tb (III) -complex towards different biomolecules has been studied using ratiometric methods of analysis by comparison of biomolecules binding affinities for Tb (III) -complex. Interaction of Tb (III) complex with DNA has been studied.

Key words

Nucleotides, Nucleobases, N-acetyl amino acids, Lanthanide complexes, Fluorescence, time-resolved, Ratiometric analysis

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