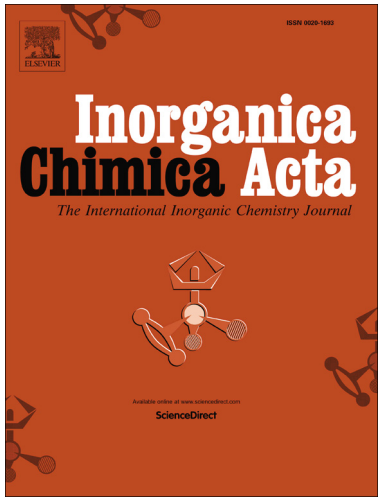

Research paper

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Siddhartha Maji, Bijit Chowdhury, Sanchari Pal, Pradyut Ghosh

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An Indolium Ion Functionalized Naphthalimide Chemodosimeter for Detection of Cyanide in Aqueous Medium

Siddhartha Maji,[a,b] Bijit Chowdhury,[a] Sanchari Pal[a] and Pradyut Ghosh* [a]

[a]Department of Inorganic Chemistry, Indian Association for the Cultivation of Science, 2A & 2B, Raja S. C. Mullick Road, Jadavpur, Kolkata, 700032 (India)

[b] Department of Chemistry, Katwa College, Purba Bardhaman 713130 (India)

E-mail: icpg@iacs.res.in.

Abstract

A naphthalimide platform based indolium ion functionalized colorimetric as well as fluorometric chemodosimeter (**L**) has been synthesized and characterized. This can selectively sense cyanide (CN^-) in aqueous medium with a low limit of detection (approximately 0.5 μM), which is around four times lower than the value of 1.9 μM set by WHO. The UV-vis and PL studies have been carried out in 40% aqueous-acetonitrile medium which shows a significant change in the visible region allowing naked eye colorimetric detection of CN^-. The mass spectrometry and ^{1}H-NMR spectroscopy are used to characterize the corresponding cyanide adduct which has also been corroborated by time-dependent density functional theory (TD-DFT) during the establishment of the sensing mechanism.

Keywords: Chemodosimeter, Cyanide sensor, Aqueous media, Colorimetric, Fluorometric, NMR titration, DFT.