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A series of terpyridine containing flexible amino diethylacetate derivatives with large two-photon action cross-sections for effective mitochondrial imaging in living liver cancerous cells

Ran Jia^a, Yingying Zhu^a, Lei Hu^b, Qiru Xiong^{*a}, Meng Zhao^b, Mingzhu Zhang^b, Xiaohu Tian^c

^a*Department of Hepatobiliary Surgery, the First Affiliated Hospital of Anhui Medical University, Hefei, Anhui, China*

^b*Department of Chemistry, Key Laboratory of Functional Inorganic Material Chemistry of Anhui Province, Anhui University, Hefei 230039, China*

^c*School of Life Science, Anhui University, Hefei 230039, China*

* *Corresponding author: xiongqiru2012@126.com*

Abstract:

Small molecules possess large two-photon action cross sections ($\Phi\sigma$) are highly demanded for biological purpose. Herein, three novel terpyridine containing flexible amino diethylacetate organic small molecules (**A1**, **A2** and **A3**) were rationally designed and their photophysical properties were investigated both experimentally and theoretically. The results revealed that the three chromophores possess large $\Phi\sigma$ and remarkable Stokes' shift in high polar solvents, which are particularly benefit for further biological imaging application. One chromophore (**A1**) displayed an effective intracellular uptake against lung cancerous living cells A549. Colocalization studies suggested the internalized subcellular compartment was mitochondria. Consequently, chromophore **A1** provides a promising platform to directly monitor mitochondria in living cells under two-photon confocal laser scanning microscopy.

Keywords: terpyridine; crystal structure; two-photon property; bioimaging

Introduction

Mitochondria could be found in all of the mammal's cells and act as a 'power

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