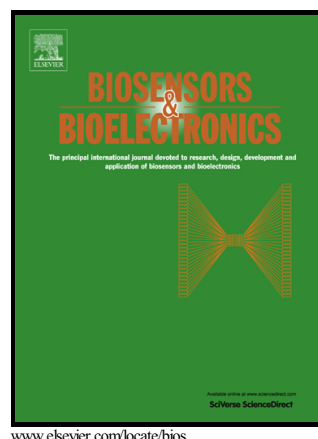


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# New Photostable Naphthalimide-based Fluorescent Probe for Mitochondrial Imaging and Tracking

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## Abstract

Monitoring mitochondria morphological changes temporally and spatially exhibits significant importance for diagnosing, preventing and treating various diseases related to mitochondrial dysfunction. However, the application of commercial available mitochondria trackers is limited due to their poor photostability. To overcome these disadvantages, we designed and synthesized a mitochondria-localized fluorescent probe by conjugating 1, 8-naphthalimide with triphenylphosphonium (i.e. NPA-TPP). The structure and characteristic of NPA-TPP was characterized by UV-Vis, fluorescence spectroscopy, <sup>1</sup>HNMR, <sup>13</sup>CNMR, FTIR, MS, etc. The photostability and cell imaging was performed on the laser scanning confocal microscopy. Moreover, the cytotoxicity of NPA-TPP on cells was evaluated using (3-[4,5-dimethylthiazol-2-yl]-2,5 diphenyl tetrazolium bromide) assay. The results showed that NPA-TPP not only has high sensitivity and specificity to mitochondria, but also exhibits super-high photostability, negligible cytotoxicity and good water solubility. In short, NPA-TPP indicates great potential for targeting mitochondria and enables a real-time and long-term tracking mitochondrial dynamics changes.

**Keywords:** fluorescent • probe • mitochondrial imaging • 1, 8-naphthalimides • photostability • real-time tracking

## 1. Introduction

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