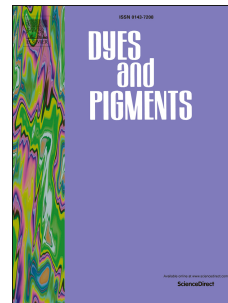


# Accepted Manuscript

Facile synthesis of green-light and large Stokes-shift emitting coumarins for bioconjugation

Jiayuan Li, Changyu Zhang, Shuai Wu, Xin Wen, Zhen Xi, Long Yi



PII: S0143-7208(17)32454-3

DOI: [10.1016/j.dyepig.2018.01.016](https://doi.org/10.1016/j.dyepig.2018.01.016)

Reference: DYPI 6490

To appear in: *Dyes and Pigments*

Received Date: 30 November 2017

Revised Date: 8 January 2018

Accepted Date: 10 January 2018

Please cite this article as: Li J, Zhang C, Wu S, Wen X, Xi Z, Yi L, Facile synthesis of green-light and large Stokes-shift emitting coumarins for bioconjugation, *Dyes and Pigments* (2018), doi: 10.1016/j.dyepig.2018.01.016.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# Facile synthesis of green-light and large Stokes-shift emitting coumarins for bioconjugation

Jiayuan Li<sup>a,1</sup>, Changyu Zhang<sup>a,1</sup>, Shuai Wu<sup>b</sup>, Xin Wen<sup>b</sup>, Zhen Xi<sup>b, c,\*</sup>, Long Yi<sup>a, c,\*</sup>,

<sup>a</sup>State Key Laboratory of Organic-Inorganic Composites, Beijing University of Chemical Technology, Beijing 100029, China. E-mail: yilong@mail.buct.edu.cn

<sup>b</sup>State Key Laboratory of Elemento-Organic Chemistry and Department of Chemical Biology, National Pesticide Engineering Research Center (Tianjin), Nankai University, Tianjin, 300071, China. Tel: 86 22 23504782; E-mail: zhenxi@nankai.edu.cn

<sup>c</sup>Collaborative Innovation Center of Chemical Science and Engineering (Tianjin), China.

<sup>1</sup>These authors contributed equally to this work.

## ABSTRACT

Bright and hydrosoluble fluorescent dyes with large Stokes shifts are widely used as molecular probes and light-emitting markers in chemistry and biology. In this report, one-step synthesis of a bright green-emitting coumarin ( $\Phi = 0.52$ ,  $\lambda_{em} = 505$  nm) was achieved from available reagents under neat conditions. The novel dye **1** showed very large Stokes shift ( $\Delta\lambda = 138$  nm) due to strong intramolecular charge transfer (ICT) effect, which was confirmed by density functional theory (DFT) calculations. Dye **1** was hydrosoluble and displayed strong emission at a wide range of pH from 3 to 8. Importantly, the secondary amine in **1** made it extremely convenient for further bioconjugation. Representative derivatives were showcased for various successful applications of fluorogenic enzyme assay, biolabelling and mitochondrial staining.

*Keywords: Coumarin, Green-emitting, Large Stokes shift; Bioconjugation*

Download English Version:

<https://daneshyari.com/en/article/6599171>

Download Persian Version:

<https://daneshyari.com/article/6599171>

[Daneshyari.com](https://daneshyari.com)