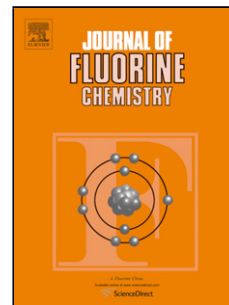


Accepted Manuscript

Title: A Green and Transition-Metal-Free Light-mediated Trifluoromethylation Reaction of Coumarins

Authors: Na Lin, Yaming Li, Xinyu Hao, Kun Jin, Rong Zhang, Chunying Duan



PII: S0022-1139(18)30192-1
DOI: <https://doi.org/10.1016/j.jfluchem.2018.08.003>
Reference: FLUOR 9207

To appear in: *FLUOR*

Received date: 10-5-2018
Revised date: 3-8-2018
Accepted date: 3-8-2018

Please cite this article as: Lin N, Li Y, Hao X, Jin K, Zhang R, Duan C, A Green and Transition-Metal-Free Light-mediated Trifluoromethylation Reaction of Coumarins, *Journal of Fluorine Chemistry* (2018), <https://doi.org/10.1016/j.jfluchem.2018.08.003>

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.

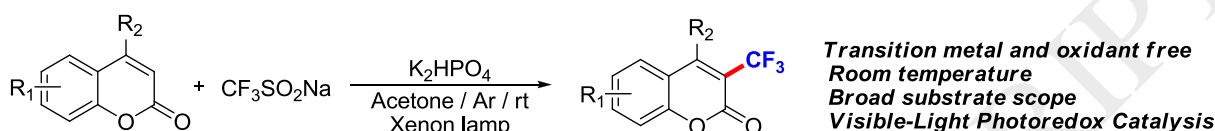
A Green and Transition-Metal-Free Light-mediated Trifluoromethylation Reaction of Coumarins

Na Lin, Yaming Li*, Xinyu Hao, Kun Jin, Rong Zhang and Chunying Duan

State Key Laboratory of Fine Chemicals, Dalian University of Technology, Dalian 116024, China.

Tel./fax: +86-411-84986295; E-mail: ymli@dlut.edu.cn (Y. Li)

Graphical abstract



An efficient and practical approach to the photoinduced trifluoromethylation of coumarins in the absence of additional metal photocatalyst was developed with easily handled $\text{CF}_3\text{SO}_2\text{Na}$. Significantly, this photochemical strategy employed acetone, one of the most widely used and cheapest organic solvents, instead of expensive metal catalyst or dangerous peroxides to generate CF_3 radical, which provides a green route to cost-effective large-scale synthesis of trifluoromethylated chemicals.

Highlights

- Coumarin is a common motif in a variety of natural products and/or synthetic molecules with interesting biological activities and technological applications and the trifluoromethyl coumarins are great attractive in the pharmaceutical and agrochemical fields.
- Visible light photoredox synthesis, employing photosensitizers have unrivaled advantages in terms the potential green chemistry.
- The combination of green visible light photocatalysis and cost-effective $\text{CF}_3\text{SO}_2\text{Na}$ (Langlois reagent) has considerable interest in both academic and industry.

Abstract

A simple, metal- and oxidant-free photo catalysis strategy for the direct trifluoromethylation of coumarins with inexpensive sodium triflate (Langlois reagent, $\text{CF}_3\text{SO}_2\text{Na}$) as the CF_3 source under xenon lamp irradiation is described. The reaction proceeds under ambient conditions and affords the corresponding products in moderate yields. The acetone can be used as low-cost radical initiator to generate CF_3 radicals from sodium triflate efficiently.

Key words: Trifluoromethylation; Coumarins; Photo-Catalyzed; Transition-Metal-Free; Acetone; Langlois reagent

Download English Version:

<https://daneshyari.com/en/article/7752227>

Download Persian Version:

<https://daneshyari.com/article/7752227>

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