



národní  
úložiště  
šedé  
literatury

## **Photochemical Synthesis of Aza-aromatic Compounds.**

Kos, Martin  
2017

Dostupný z <http://www.nusl.cz/ntk/nusl-369653>

Dílo je chráněno podle autorského zákona č. 121/2000 Sb.

Tento dokument byl stažen z Národního úložiště šedé literatury (NUŠL).

Datum stažení: 08.08.2024

Další dokumenty můžete najít prostřednictvím vyhledávacího rozhraní [nusl.cz](http://nusl.cz) .

## Photochemical Synthesis of Aza-aromatic Compounds

Martin Kos, Jaroslav Žádný, Jan Storch, Jan Sýkora, Vladimír Církva\*

Institute of Chemical Process Fundamentals of the CAS, Rozvojová 135, 165 02,  
Prague 6, Czech Republic  
e-mail: kos@icpf.cas.cz

Creation of polyaromatics with unique structural attributes and properties remains in focus of many researchers. Recent literature reveals many examples of exploiting aromatic structures as molecular springs<sup>1</sup>, selenoids<sup>2</sup>, tweezers<sup>3</sup>, motors<sup>4</sup>, dye-sensitized solar cell materials<sup>5</sup>, OLEDs<sup>6</sup> and sensors<sup>7</sup>. In recent years, the preparation of heteroaromatic species has been studied extensively in order to exploit the unique properties of these molecules. However, aza-aromatic compounds were not elaborated sufficiently and only a few reports have described the synthesis of such compounds despite their possible applications in various branches of chemistry.

Herein we report synthesis of series of novel both aza- and diaza-helicenes, and phenacenes, which were prepared mainly by photocyclization of corresponding imine precursors. Reaction conditions of photocyclization (i.e. solvent, photocatalyst, type of irradiation, use of water scavenger) were optimized and enhanced. Usage of TEMPO as oxidizing agent leads to improvement of yields up to 72 %.

Prepared 2-pyridyl substituted azaphenacenes will be utilized for preparation of potential semiconductive layers in cooperation with Institute of Macromolecular Chemistry of the CAS.

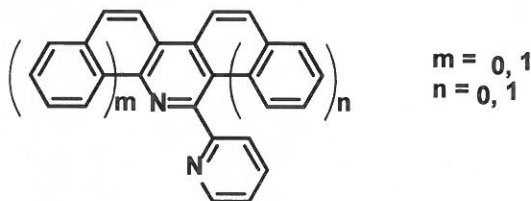


Fig. 1: 2-Pyridyl substituted azaphenacenes

This work was supported by the Czech Science Foundation (reg. No. 15-12719S and 17-02578S).

- 1 Tanaka, K.; Osuga, H.; Kitahara, Y. *J. Org. Chem.* **2002**, *67*, 1795.
- 2 Tagami, K.; Tsukada, M.; Wada, Y.; Nishide, H. *J. Chem. Phys.* **2003**, *119*, 7491.
- 3 Fuchter, M.J.; Schaefer, J.; Judge, D.K.; Krossing, I. *Dalton Trans.* **2012**, *41*, 8238.
- 4 Kelly, T.R.; Cai, X.; Damkaci, F.; et. al. *J. Am. Chem. Soc.* **2007**, *129*, 376.
- 5 Ooyama, Y.; Shimada, Y.; et. al., *J. Photochem. Photobiol. A* **2009**, *203*, 177.
- 6 Jhulki, S.; Moorthy, J.B. et. al., *Chem. Eur. J.* **2016**, *22*, 9375.
- 7 Storch, J.; Žádný, J.; Strašák, T.; Kubala, M.; Sýkora, J.; Dušek, M.; Církva, V.; Matějka, P.; Krbal, M.; Vacek, J. *Chem. Eur. J.* **2015**, *21*, 2343.