

Novel Divinyl Sulfides: Potential Luminescent Compounds

Matias Monçalves, Mariana M. Bassaco, Marcos A. Villetti and Claudio C. Silveira*

Department of Chemistry, Universidade Federal de Santa Maria, 97105.900, Santa Maria, Brazil.

*silveira@quimica.ufsm.br

Keywords: Wittig-Horner, Divinyl Sulfides, Fluorescence

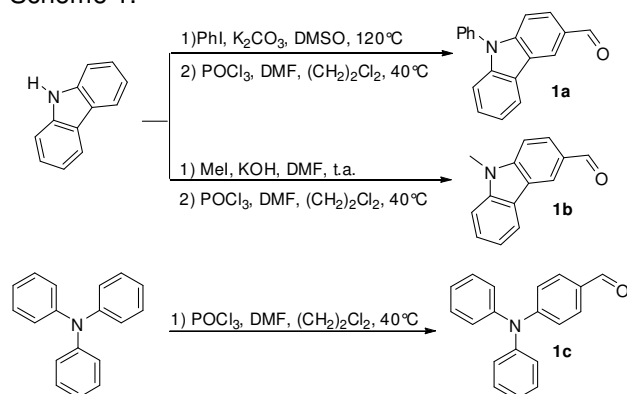
INTRODUCTION

Luminescent devices based on organic compounds with low molecular weight have attracted much attention because of their application as light-emitting diodes (LED's) and flat-panel displays¹. Many organic π -conjugated materials have been studied due their excellent electronic properties² and the vinylic chalcogenides appear as an interesting class. Here we describe the preparation of novel divinyl sulfides with peripheral arylamines and a brief study of luminescent properties of these compounds.

RESULTS AND DISCUSSION

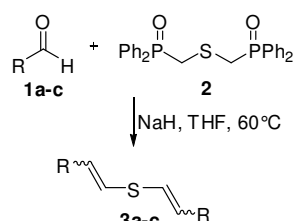
Recently, we describe the Wittig-Horner reaction of (diphenylphosphinoyl)methyl chalcogenides with aldehydes and ketones yielding symmetric and unsymmetric vinyl chalcogenides³. In this work, we performed the reaction of bis(diphenylphosphinoyl)methyl sulfide with arylamine aldehydes to obtain divinyl sulfides.

The starting aldehydes were obtained according the Scheme 1.



Scheme 1. Synthesis of aldehydes 1a-c.

From these aldehydes was possible to obtain the corresponding vinylic sulfides, as shown in Scheme 2.



Scheme 2. Synthesis of divinyl sulfides by Wittig-Horner reaction.

We have synthesized three new examples of divinyl sulfides, with yields between 70-75% (Figure 1). The compounds were characterized by ¹H-NMR, ¹³C-NMR and Mass spectrometry (MS).

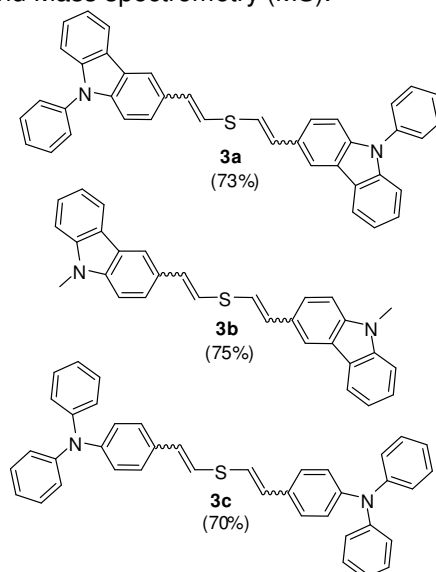


Figure 1. Divinyl sulfides 3a-c.

The study of photoluminescence in CH_2Cl_2 solution was performed for the three compounds, resulting in a maximum excitation at 279 nm and emission maximum at 431 nm.

CONCLUSION

The Wittig-Horner reaction of arylamine aldehydes with bis(diphenylphosphinoyl)methyl sulfide provides new divinyl sulfides in good yield and high blue fluorescence in solution.

ACKNOWLEDGEMENTS

UFMS, CAPES, FAPERGS/PRONEX 10/0005-1 and CNPQ.

REFERENCES

- 1 Thomas, K.; Lin, J.; Ko, C-W. *J. Am. Chem. Soc.* **2001**, 123, 9404.
- 2 Adhikari, R.; Neckers, D.; Shah, B. *Eur. J. Org. Chem.* **2009**, 3341.
- 3 (a) Silveira, C. C.; Rinaldi, F.; Guadagnin, R. *Eur. J. Org. Chem.* **2007**, 4935; (b) Silveira, C. C.; Rinaldi, F.; Bassaco, M. M.; Guadagnin, R. C.; Kaufman, T. S. *Synthesis*. **2011**, 1233.