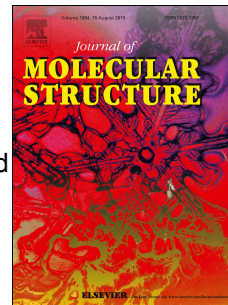


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Synthesis and nonlinear optical properties of novel conjugated small molecules based on indole donor

Jialei Liu^{a*}, Maolin Zhang^a, Wu Gao^b, A.A.Fedorchuk^c, I.V. Kityk^{d*}

a. Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing 100190, PR China;

b. Xi'an catalyst new materials Co., Ltd, Xi'an 710299, China;

c. Ivan Franko National University of Lviv, Faculty of Chemistry, Lviv, Ukraine

d. Institute of Optoelectronics and Measuring Systems, Faculty of Electrical Engineering, Armii Kajowej 17,

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Abstract

Buchwald-Hartwig amination of aryl halides with solvent-free condition was used for the preparation of electron donors with high density of electron cloud. Organic second order nonlinear optical chromophore ZML-c based on this electron donor was designed and synthesized. And chromophore ZML-ref without modified groups was also prepared as the contrast. Their delocalized energy levels were estimated by UV-Vis. spectra. Their thermal properties were studied by thermogravimetric analysis (TGA). Obviously, chromophore ZML-c showed lower delocalized energy levels and lower thermal decomposition temperature (just about 160 °C). The poled films showed the largest electro-optic (EO) coefficients of 23.5 pm/V and 10.6 pm/V respectively for chromophore ZML-c and ZML-ref. These results indicate that effective modification in indole ring may be a promising way to drastically change the electro-optical features of the titled compounds and show a direction of designing new electron donor in the field of nonlinear optical materials.

Keywords: Chromophore; Indole; Electron donor; Nonlinear optic; Buchwald-Hartwig

* Corresponding author: liujialei@mail.ipc.ac.cn; iwank74@gmail.com

1. Introduction

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