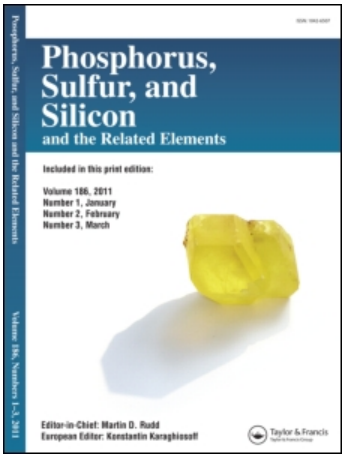

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A Highly Functionalized BEDT-TTF Derivative

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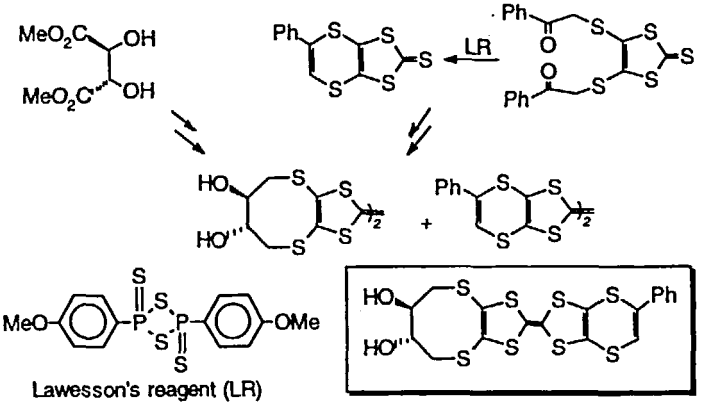
The synthesis of a highly functionalized BEDT-TTF derivative containing phenyl-1,4-dithiin and 2,3-dihydroxybutane-1,4-dithio peripherals is described.

Keywords: BEDT-TTF; superconductor; Lawesson's reagent

Studies to prepare challenging target molecules closely related to bis(ethylenedithio)tetrathiafulvalene, 'BEDT-TTF' or 'ET', have made a significant contribution to heterocyclic and material chemistry. This focused interest has been driven by the observation of a variety of electrical properties of the different radical cation salts of ET, such as conducting and semi-conducting behaviours[1] and in some cases superconducting property at very low temperatures.

Recently, two important features have been the subject of the newly designed 'ET' derivatives, (i) introduction of the functional groups leading to the hydrogen bonding and (ii) systems with extended π-electron conjugation[2]. Most of the 'ET' derivatives synthesised so far posses one of these features and extension of the donor could only be achieved in the

middle[2]. In our design, we have achieved to include these two features in one donor utilising the recently developed reaction of Lawesson's reagent with 1,8-diketones[3] on one peripheral and introduction of 2,3-dihydroxybutane, synthesised from dimethyl L-tartrate, on the other[4]. It is expected that such a system will display a highly ordered crystal structure through hydrogen bondings and delocalise the positive charge formed by charge-transfer salt over an extended area. The outlined reaction scheme to obtain the target molecule in bracket is shown below.



Acknowledgment

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