

Abstract

Aim of this thesis was to synthesize 5,5''-bis(terpyridine-4'-yl)-3'-(6-bromohexyl)-2,2':5',2''-terthiophene. This substance consists of terthiophene chain, which is substituted with bromohexyl group in position 3' and capped by two terpyridine groups. The synthesis was approached in two different ways, with use of various initial compounds, using mainly the Suzuki reaction. Strategies were recorded, and their process and outcome evaluated. Prepared substances were characterized, and structurally identified using ^1H , ^{13}C and ^{11}B NMR spectroscopy.

For the prepared oligomeric product 5,5''-bis(terpyridine-4'-yl)-3'-(6-bromohexyl)-2,2':5',2''-terthiophene, spectroscopic and oxidation-reduction properties were determined, by UV-VIS spectroscopy, emission fluorescence and cyclic voltammetry. Furthermore, the fluorescence quantum yield was also determined.

Further in the thesis, the ability of the prepared oligomer to form complexes with zinc ions was studied. Complexation was carried out in tetrahydrofuran solution, and studied using UV-VIS and fluorescence spectroscopy, measured in solution for samples of produced concentration range.