

## *Summary*

The goal of the diploma thesis was to prepare a spectrum of electron-rich macrocyclic derivatives of tetrathiafulvalene (TTF), which should serve as electron donors in interactions with electron-deficient acceptor molecules. A two-step synthesis was used for their preparation. First, a non-cyclic three-segment precursor was prepared by a reaction of a thiolate TTF construction block with a bis(bromomethyl)aromate. Then, a reaction of this precursor with another molecule of bis(bromomethyl)derivative closed the macrocycle. The latter reaction produced mainly [2+2] macrocycles containing two TTF and two aromatic units. In most cases, larger [4+4] macrocycles were also isolated from the reaction mixture.

Besides thiolate TTF unit two other thiolate units, one with extended TTF core and other with smaller trithiafulvene ring, were used analogically in synthesis. By a combination of three thiolate blocks and five bis(bromomethyl)aromates 11 three-segment components were prepared and these were converted to 11 structural types of macrocycles with [2+2] and 7 macrocycles with [4+4] stoichiometry. The resulting macrocycles were characterized by  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectroscopy and analyzed by a gel permeation chromatography. Their structures were also confirmed by high-resolution mass spectroscopy.

Interaction of the macrocycles with model acceptor molecules such as TCNQ, octafluoronaphthalene and fullerene  $\text{C}_{60}$  was examined by UV-Vis and NMR spectroscopy. No significant spectral changes that would confirm clearly the expected donor-acceptor interactions were observed within the range of concentrations defined by the limited solubility of both partners.