

## Abstract

This thesis is focused on dimer macrocyclic ligands and their complexes. Two dimer macrocyclic ligands based on ligand DO3A, linked with xylyl linker were prepared (BDO3A-*p*-X and BDO3A-*m*-X). Both synthesized ligands were characterized using NMR, MS, EA and in the case of BDO3A-*p*-X by X-ray crystallography. Data for calculating pseudo-first order reaction rates for complexations with Ce<sup>3+</sup> metal ion and their pH dependency were obtained by use of UV/VIS spectrophotometry. Obtained data were compared to structurally close monomer ligand BnDO3A. Dimer ligands display different coordination properties based on proximity and position of coordinating cavities. Both prepared ligands behave differently than structurally close monomer ligand BnDO3A.