

Abstract: Magnetic Resonance Imaging (MRI) is one of noninvasive imaging and diagnostic methods in today's medicine. The most commonly measured nucleus is ^1H of the water molecules present in the human body. There are also methods that use signal saturation transfer between the contrast agent and water molecules via exchangeable ^1H nuclei, or use a different nucleus like ^{19}F . Compounds that show a high potential in this area are complexes of paramagnetic ions such as Gd^{3+} , Eu^{3+} , Co^{2+} , Cu^{2+} and Ni^{2+} , which can affect relaxation times and chemical shifts of other atoms due to their magnetic properties.

This Master's thesis focuses on ligands **L1** and **L2** which were prepared in the Bachelor thesis. The main focus is on preparation of complexes with selected paramagnetic ions and subsequent study of their properties relevant for a potential use as contrast agents for ^{19}F -MRI and CEST methods.

Keywords: ^{19}F -MRI, CEST, macrocyclic ligands, coordination chemistry