

Abstract

The focus of this thesis is the synthesis and characterisation of one newly prepared and one previously prepared compound which based on the results of x-ray structure analysis both contain systems of conveniently long hydrogen bonds. These systems potentially allow proton transfer through their structure. The results acquired by measuring proton conductivity of the newly prepared substance are also discussed in this thesis. Furthermore, it contains the results of the characterisation of both prepared substances by IR spectroscopy, powder x-ray diffraction and diffraction on monocrystal.

The measurement of proton conductivity was carried out using tablets consisting of pressed powder samples which had gold-palladium alloy electrodes applied to them.

The specific conductivity of these samples was determined by the measured electric resistance and the size of these tablets. Based on the conducted measurements, it can be stated that the newly synthesised substance does not exercise proton conductivity within the detection limit of used hardware, whereas the previously prepared one does. These results are further discussed in corresponding chapter considering primarily the structure of both substances.