Title: **Synthesis, purification and characterization of organotellurium ligands and complexes.**

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The information about oraganotellurium chemistry is rather sparse. However, the advent in the development of reliable synthetic routes and characterization methods like FT-NMR spectroscopy and single crystal X-ray diffraction has facilitated rapid progress in inorganic coordination chemistry of organyltellurides. Nevertheless, in comparison with organylsulphur and selenium ligands the coordination chemistry of tellurium is still rather limited.

In spite of all this, research interest in tellurium chemistry has increased and unique features of tellurium have evolved novel promising applications in steel industry as an additive, in the development of nanomaterials, in organic synthetic chemistry and as a semiconductor in electronics and solar cells.

The objective of the present work is to report the preparation and crystal structure determination of organotellurium molecules as well as coordination compounds containing organotellurium ligands. After searching in the database conquest 1.19, structures using a transition metal of the second and the third row and the ligand Th_2Te and $naph_2Te$ were not found, so it might be interesting to try to synthesise these coordination complexes in order to increase the amount of information in this field.

The synthesis of the telluroether (Th_2Te) used as a ligand in the experiments of this report was successful leading to a yield of 31 %. However crystals of mercury and ruthernium complexes using Th_2Te and $naph_2Te$ could not be obtained. However, a chemical reaction is observed but the product could not be analysed by single crystal X-Ray diffraction.

An oxidative halogenation (with iodine) of the telluroether previuously synthesised was done with a yield of 33 %. The product was analysed by single crystal XRD. Reactions in 1:2 and 1:3 proportion (telluroether: I_2) were tried afterwards. The crystallization still in process.

In this report are also discussed which could be the reasons of why lower yields were obtained for those reactions that have already been published.

Furthermore, we are going to try to understand which chemical explanation could be of why mercury and ruthenium complexes could not be obtained with the solvents available and which could be the next steps to do in order to continue the work done in this report.