

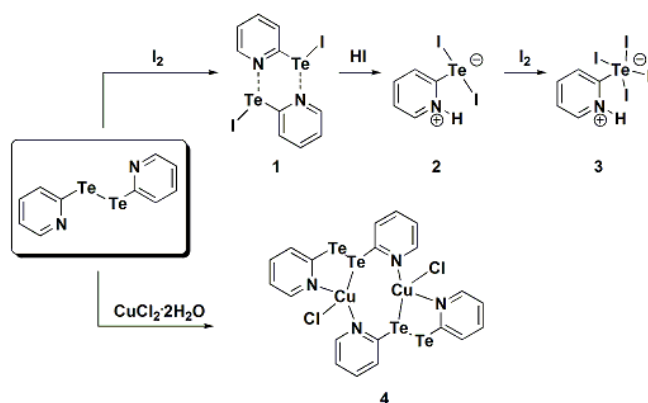
# Dealing with bis(2-pyridyl)ditelluride: a versatile precursor to zwitterions and complexes

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Pyridyltellurium moieties are quite useful building blocks in synthetic chemistry because of the different nature of the Te and N binding sites, which may provide a sort of structures.<sup>1-4</sup> Recently,<sup>5</sup> we prepared a diversity of compounds starting from bis(4-pyridyl)ditelluride -  $\text{Py}_2^*\text{Te}_2$  - achieving coordination complexes and zwitterions. Here we present four new compounds obtained from bis(2-pyridyl)ditelluride -  $\text{Py}_2^\circ\text{Te}_2$  and their crystal structures. Figure 1 shows the summary of synthetic routes used in this study.



**Figure 1.** Summary of synthetic routes used in this study

Compound **1** is a  $\text{Te}^{\text{II}}$ -dimer obtained by addition of iodine in a solution of  $\text{Py}_2^\circ\text{Te}_2$  in toluene. Ensuing addition of hydriodic acid to **1** provided compound **2**, which is a T-shaped  $\text{Te}^{\text{II}}$ -zwitterion. Further addition of iodine furnished compound **3**, a square pyramidal  $\text{Te}^{\text{IV}}$ -zwitterion. Complex **4** is obtained when a solution of  $\text{Py}_2^\circ\text{Te}_2$  in is layered on a solution of copper(II) chloride. Slow diffusion provided red crystals in the interface of the solutions.

The  $\text{Te} \cdots \text{N}$  intermolecular interactions in **1** are about 16% larger than the sum of covalent radii of the atoms, but are in the range of  $\text{Te} \cdots \text{N}$  found in the literature.<sup>5</sup> In **2**, the T-shaped coordination for Te exhibits a torsion angle about  $47^\circ$  between the aromatic ring and the C-Te-I plane, while similar compounds are *quasi*-planar.<sup>6</sup> This T-shaped geometry in **2** is modified to a distorted square if accounting the  $\text{Te} \cdots \text{I}$  secondary bonds, which connect adjacent molecules. The square pyramidal geometry around Te in **3** converges to a distorted face-capped octahedron if the  $\text{Te} \cdots \text{I}$  secondary bonds are taken in account, and these interactions lead to a pseudo-polymeric structure. In the structure of the dimeric complex **4**,  $\text{Py}_2^\circ\text{Te}_2$  molecules behave as ligands with  $\kappa\text{N}^2, \text{Te}^8$  coordination to one  $\text{Cu}^{\text{I}}$  ion and  $\kappa\text{N}^{10}$  to the other  $\text{Cu}^{\text{I}}$ . The geometry around  $\text{Cu}^{\text{I}}$  is distorted tetrahedral and the Te atom coordinated to copper has a trigonal pyramidal geometry. Further studies will be carried out to develop more pseudo-halide derivatives and also heterometallic complexes.

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