Poster Presentation

LA.P14

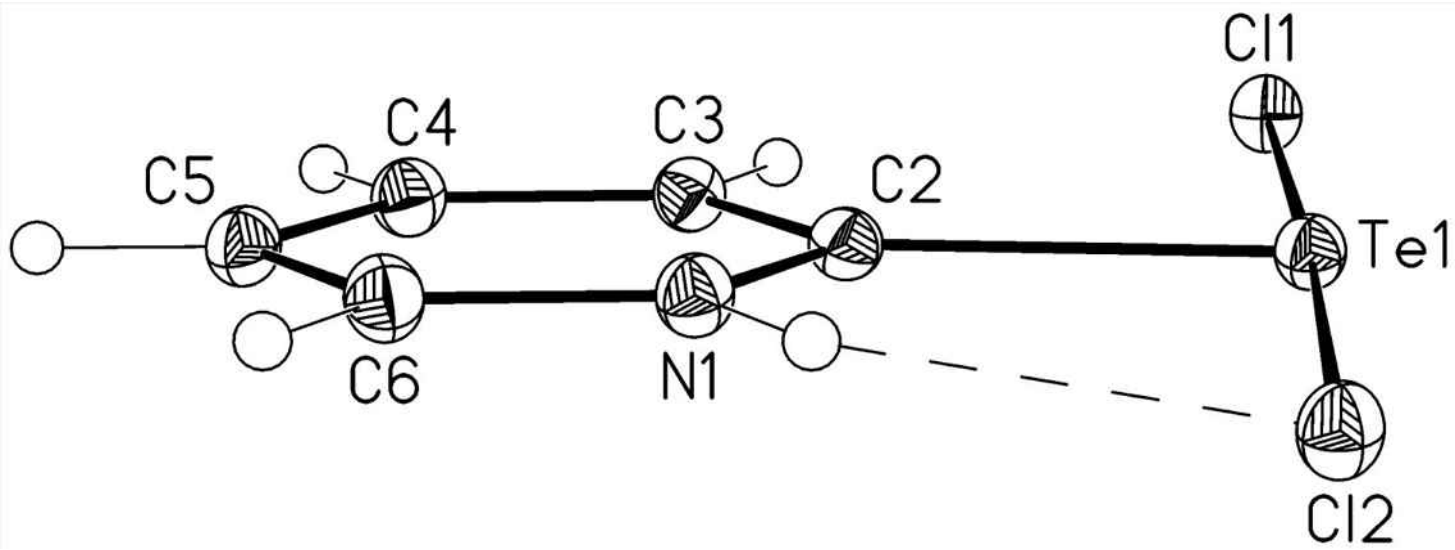
A novel facile route to stabilize highly reactive organotellurenyl(II) chlorides

V. Khrustalev[1], Z. Matsulevich[2], R. Aysin[3], A. Peregudov[4], L. Leites[3], A. Borisov[2]

[1]Nesmeyanov Institute of Organoelement Compounds, X-ray Structural Centre, Moscow, Russia, [2]Alekseev State Technical University, Department of Chemistry, Nizhny Novgorod, Russia, [3]Nesmeyanov Institute of Organoelement Compounds, Laboratory of Molecular Spectroscopy, Moscow, Russia, [4]Nesmeyanov Institute of Organoelement Compounds, Laboratory of Nuclear Magnetic Resonance, Moscow, Russia

Recently we reported a very interesting possibility to stabilize highly reactive organoselenenyl(II) chlorides by the N-functionalization of organyl substituent with the subsequent addition of a hydrochloric acid molecule [Ref.]. However, it is well-known that organotellurenyl(II) chlorides are even less stable than the related organoselenenyl(II) chlorides. This fact prompted us to apply this approach to organotellurenyl(II) chlorides containing N-functionalized aryl substituents. In the present work, a novel facile route to stabilize the highly reactive Ar*TeCl species (Ar* = nitrogen-containing aryl) by hydrochloric acid addition has been demonstrated, exemplified by the two new T-shaped tellurenyl chloride adducts – 1H-pyridine-2-tellurenyl-dichloride (Fig.) and 4,6-dimethyl-1H-pyrimidine-2-tellurenyl-dichloride. Their quasi-planar zwitterionic structures with strong intramolecular N–H…Cl hydrogen bonds have been evidenced by experimental (single-crystal X-ray diffraction, multi-nuclear NMR, vibrational spectroscopy) and theoretical (DFT and QTAIM) methods. Owing to this structure, the studied heteroaryl tellurenyl dichlorides react with alkenes similarly to the corresponding monomeric tellurenyl chlorides affording the same cycloaddition products. The described approach to difficult-to-obtain, extremely unstable organotellurenyl(II) chlorides opens alluring prospects in the synthesis and study of low-valent chalcogen compounds.

[1] *V. N. Khrustalev, Sh. R. Ismaylova, R. R. Aysin et al., Eur. J. Inorg. Chem., 2012, 5456–5460.*



Keywords: T-shaped tellurenyl chloride adducts, X-ray diffraction study, Quantum-chemical calculations