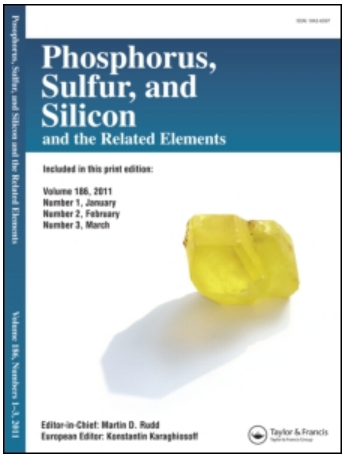

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2-SELENO- AND 2-TELLUROIMIDAZOLINES: SYNTHESES, STRUCTURES AND PROPERTIES

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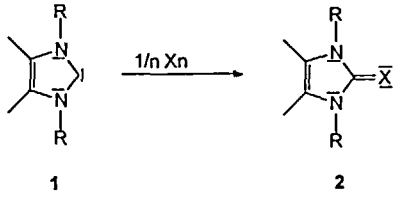
2,3-dihydro-2-selenoimidazoles and their tellurium analogues (**2**) are formed through the reaction of the corresponding 2,3-dihydro-imidazol-2-ylidenes (**1**) with the chalcogenes. **2** exhibit nucleophilic properties demonstrated by the formation and properties of their iodine derivatives **3** - **7** and their pentacarbonyl metal complexes **8**.

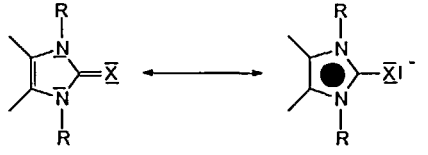
Key Words: Selenium compounds, tellurium compounds, iodine compounds, imidazoles

Stable seleno-and tellurocarbonyl compounds **2** are obtained from the reaction of the carbenes **1** with selenium[1] and tellurium,[2] respectively. The NMR data agree with a bonding situation analogous to phosphane chalcogenides $R_3P{=}X$ containing a high negative charge density at the chalcogen atom.[3] This result is confirmed by a significant lengthening of the CSe and CTe distance. Apart from a tellurocarbonyl osmium complex,[4] **2b** (R = $^iC_3H_7$) is the first structurally characterized compound containing a formal CTe double bond.

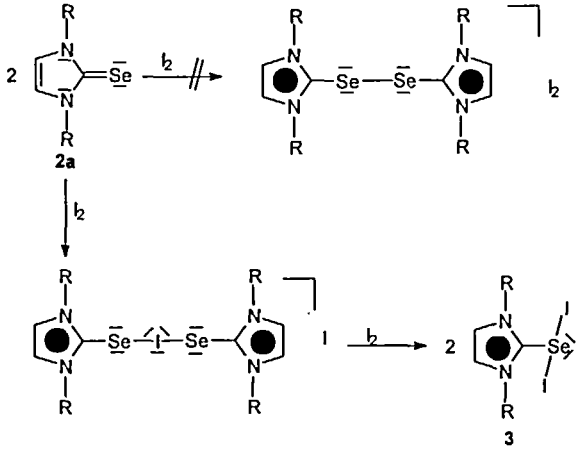


1 **2**

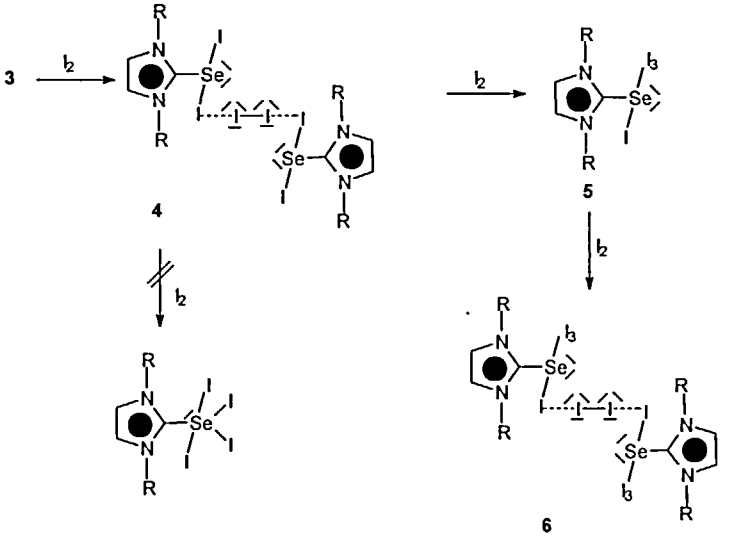
X = Se (a), Te (b) ; R = Me, Et, i-Pr



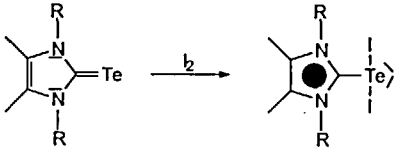
The high negative charge density at the chalkogen atoms makes **2** to be strong nucleophiles which may be compared to the anions RX^-. **2a** is oxidized by iodine in several steps starting from the SeI_2 complex **3**[5] followed by a sequence of charge transfer adducts and I_3^- salts.[6]



2a **3**

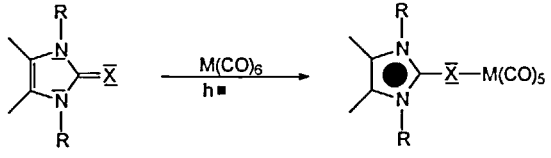


From the reaction of **2b** with iodine, the dimeric TeI_2 complex **7** is obtained exclusively.[7] On comparison with **3** the structure of **7** reveals the tendency of tellurium to get high coordination numbers.



2b **7**

As expected, the donor properties of the ligands **2** are influenced by their ylidic nature. This result is documented by the spectroscopic data (i.r., ^{13}C n.m.r.) of the pentacar-bonyl metal complexes **8**.



2 8

The structure of **8** (X = Se, M = Cr, R = $^{i}C_3H_7$) exhibits the lengthening of the CSe bond upon coordination.[8]

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