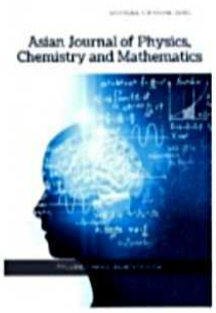

Synthesis of organotellurium compounds by transmetalltion reaction of organomercury compounds / review

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ABSTRACT

Synthetic organotellurium compounds have increased markedly recently as a result of their important applications in different fields, including synthetic intermediates, reagents, antioxidant agents, catalysts, antitumors, pharmaceutical agents, and organic synthesis, because the organotellurium group easily undergoes electrophilic or nucleophilic reactions. There are a variety of synthetic routes to prepare organotellurium compounds. In this review, we will discuss the method of preparing organic tellurium compounds using the transmetallation reaction of organomercury compounds. Using this method, many organic tellurium compounds based on amines, pyrazole, shiff base, azo, and thiadiazole moiety were prepared, which may not be prepared by other methods.

Keywords:

Introduction

Tellurium is a stable and solid element lies after the selenium in the periodic table group 16 which called chalcogens. Te bears a lot of similarities with selenium in many of its properties and reactions. It is classified as a metalloid due to Te is properties that are intermediate between metals and nonmetals [1, 2]. Franz Joseph Müller von Reichenstein discovered it in 1782, 35 years before selenium was discovered [1]. Tellurium is less abundant in the Earth's crust than gold, platinum, or the so-called "rare-earth" metals (around 1 ppb)[3]. In nature, tellurium is a mixture of isotopes; those with a natural abundance 34.5% are ^{130}Te (2.5%),^{128}Te (31.8%), ^{126}Te (18.7%), ^{125}Te (7.0%), ^{124}Te (4.6%) and ^{122}Te (41%). Compounds including one or more tellurium atoms showed unique patterns in mass spectra as a result of this distribution. Importantly, the isotope ^{125}Te has nuclear spin (I = 1/2) of the nucleus which allows for NMR spectroscopic studies of tellurium compounds both in solution and in the solid state; the isotope ^{123}Te (abundant 0.9%) also has I = 1/2. The range of ^{125}Te NMR chemical shifts relative to Me_2Te ($^{\delta}$ 0 ppm), which range from around 1800 ppm for the telluride ion (Te^{-2}) to around +3100 ppm for tellurium cations, makes it easier to identify tellurium in a variety of chemical environments, such as different oxidation states. Furthermore, the magnitude