



Synthesis, Characterization and Thermal Study of some new Organochalcogenide compounds containing arylamide group

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Abstract

Two Series of organochalcogen compounds were prepared. The first series was prepared by the reaction of 2-chloro-N-arylacetamide (where aryl is benzyl, phenyl, *o*-toluene, or *p*-toluene) with sodium hydrogen selenide (prepared *in situ*) to give diorganyl selenide compounds (R₂Se). The second series was prepared by reaction of N-benzyl-2-chloro-N-(2-chloroacetyl) acetamide with sodium chalcogenate, Na₂E (where E= S, Se, and Te) to give the corresponding cyclic chalcogenide compounds. Diodo derivatives of cyclic selenide and telluride were also prepared. The thermal stability of the new selenium compounds (R₂Se) were decomposed at 300°C. Thermogram showed a phase transfer point between 120-150°C indicating that these compounds may act as liquid crystal compounds. All new compounds were characterized by CHN elemental analysis, UV-Visible, FT-IR and ¹H NMR spectroscopic data.

Keywords: 2-chloro-N-arylacetamide, selenium, tellurium, organochalcogen compounds, heterocycles.

1. Introduction

Selenium and tellurium are rare elements, and they are regarded as toxic metalloids although they have a role in some biological applications [1,2]. Both elements are reported to be essential elements[3]. Organo chalcogenides, diorgano dichalcogenides, and selenazoles are well known compounds and they are widely studied for their biological activities [4]. Thus, several methods were used to prepare such compounds. The most used method involving chalcogenide reagents is the nucleophilic substitutions using organic halides with disodium or sodium hydrogen chalcogenide [5].

In this paper, a series of new organochalcogenide compounds containing an amide group were prepared in the hope to use them as antioxidants and

antibacterial agents. Furthermore, their thermal properties will be discussed.

2. Materials

All materials and solvents used in this study were of analytical reagent grade (Sigma, Aldrich, and British Drug House companies) and used as supplied.

3. Experimental

3.1. Synthesis of compound

3.1.1. Synthesis of 2-Chloro-N-phenylacetamide

A mixture of aniline (3.72 g; 4 mmol) and potassium carbonate (5.52 g; 4 mmol) in 70 ml of acetone was stirred for 10 min. Chloroacetylchloride

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