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Syntheses, spectral and structural characterization of Cd(II) complexes of 5-(thiophen-2-yl)-1,3,4-oxadiazole-2-thione, 2-thiohydantoin and 2-thenoyltrifluoroacetone

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**Syntheses, spectral and structural characterization of Cd(II) complexes of 5-(thiophen-2-yl)-1,3,4-oxadiazole-2-thione, 2-thiohydantoin and 2-thenoyltrifluoroacetone**

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**Abstract**

Three Cd(II) complexes, [Cd(5-thot)<sub>2</sub>(en)<sub>2</sub>] (**1**), [Cd(thd)<sub>2</sub>(Br)<sub>2</sub>]<sub>n</sub> (**2**) and [Cd(ttfa)<sub>2</sub>(en)] (**3**) have been synthesized from 5-(thiophen-2-yl)-1,3,4-oxadiazole-2-thione, 2-thiohydantoin and 2-thenoyltrifluoroacetone by the reaction of cadmium (II) salt. The complexes have been characterized by various physicochemical methods. Complexes **1**, **2** and **3** crystallize in monoclinic system with space group P 21/n, P 21/c and P 21/c, respectively. The Cd(II) centre in complex **1** adopts a distorted octahedral geometry with two oxadiazole nitrogen and four nitrogen atoms of two en ligands. In the polymeric structure of complex **2**, the Cd(II) centre is bonded through two thione sulphur and four bridged bromide ions having distorted octahedral geometry. The Cd(II) ion is bonded through two ethylenediamine nitrogens and four thenoyl oxygen atoms in complex **3**. The course of the thermal degradations of complexes **1-3** have been investigated by TGA which indicate that metal oxide is formed as the final residue. The complexes are stabilized by various types of intermolecular extended hydrogen bonding providing supramolecular framework.

**Keywords:** Sulphur donor ligand, polymeric complex, Cd(II) complexes, Supramolecular architecture.

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