

**A Novel Inorganic-Organic Hybrid Material:  
Synthesis and X-Ray Structure Studies of 1,3-Dimethyl-1,2,3-benzotriazolium  
Silver-Thiocyanate Complex**

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**Abstract**

A novel 1,3-dimethyl-1,2,3-benzotriazolium silver-thiocyanate complex  $[(\text{CH}_3)_2\text{Bz}] [\text{Ag}(\text{SCN})_2]$  has been synthesized and structurally characterized by single-crystal X-ray diffraction. This hybrid material is expected to take the advantage of organic, inorganic and polymeric materials. It is crystallized in the monoclinic unit cell and space group  $P2_1/n$ . The structure is consisting of discrete 1,3-dimethyl-1,2,3-benzotriazolium cation and negative charge infinite dithiocyanatoargentat. Each silver atom in the coordination polymer anion is surrounded by four thiocyanate groups. Silver coordinates two different thiocyanate N-atoms and two further different thiocyanate S-atoms. These lead to a distorted tetrahedrally coordination geometry and are linking into two dimensional layers. The adjacent layers are parallel to each other, whereas 1,3-dimethyl-1,2,3-benzotriazolium cations fill in between layers.

*Keywords: Benzotriazolium, Thiocyanate; Silver Complex; Crystal Structure*