There is also a very weak intermolecular Sn···O interaction in complex **4** between Sn2 and the uncoordinated oxygen atom of carbonyl group of a neighboring molecule and link the discrete molecular into a 1D chain with the Sn···Sn separation of 8.629 Å. Although the Sn–O distance [Sn2–O2 = 2.975 Å, (BO = 0.1)] is considerably longer than the normal Sn–O covalent bond, it lies in the range of Sn···O distances of 2.61–3.02 Å that have been reported to suggest Sn–O bonding [7]. However, such an elongation of Sn–O bond from the normal covalent bond distance point to a considerable ionic character associated with Sn–O bond.

Furthermore, the intermolecular NH…Cl hydrogen bonds produce two dimensional supramolecular structures in the lattice.

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2-Chloro-N_-[4-(dimethylamino)benzylidene]-N-[4-(3-methyl- 3-phenylcyclobutyl)-1,3-thiazol-2-yl]acetohydrazide

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3- Substituted cyclobutane carbxylic acids exhibit anti-inflammatory and anti-depressant activity [1], as well as having liquid crstal properties [2]. Also, various thiazole derivaties have been shown to possess herbicidal [3], anti-inflammatory [4], anti-microbial [5], and anti-parasitic properties.

The molecular conformation of the title compound, $C_{25}H_{27}ClN_4OS$, is stabilized by an intramolecular benzylidine C—H...$N_{thiazole}$ hydrogen bond. The thiazole ring makes dihedral angles of 12.0 (3)^o and 20.4 (2)^o, respectively, with the phenyl and benzene rings, while the phenyl and benzene rings make a dihedral angle of 22.6 (2)^o. The crystal packing involves weak intermolecular thiazole C—H…$O_{carbonyl}$ and methyl C—H…π hydrogen-bonding associations

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New Copper(I) Polymers Assembled by Dithioether Ligands

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During the last decade there is a spectacular increase of interest in the field of Cu(I)–based polymers due to their rich structural chemistry and photo-physical properties. The networks resulting from CuX/*N,P,S*-organic ligand self-assembly processes may adopt linear (1D), layered (2D) or three-dimensional (3D) topologies.[1] We present here some new structural features observed in CuX (X=I, Br, Cl) / $RS(C)_nSR$ limited to n=4 systems. The C_4 spacer may be an *n*-butyl like (R-S-CH_2-CH_2-CH_2-CH_2-S-R) or 2-butylene (R-S-CH_2-CH=CH-CH_2-S-R) in both the Z- and E- geometries. The most largely studied copper(I) halide is CuI because it easily forms the cubane–like Cu_4I_4 motif as a secondary building unit (SBU) responsible for the intense luminescent properties.[2] However, other Cu_nX_m stoechiometries may also be reached, the most frequent is that of Cu_2X_2 rhomboid.

In C_4 spacer *n*-butyl-like series with Cu_4I_4 SBU the 2D structures are observed with R=*t*Bu and *n*Bu: ($Cu_4I_4S_4$, 2:1 CuX: ligand ratio). However, the layers therein are not planar, but undulating over the respective crystal lattice planes. The deviations of respective Cu_4I_4 centroids over these planes reaches ± 1.87 Å for R=*t*Bu (Pbcn) and ±1.81 Å for R=*n*Bu (P21/c).[3] The 2D structure is obtained for R=*t*Bu series with CuBr (P-1), but the SBU therein is rhomboidal Cu_2Br_2 with the overall ratio CuBr:ligand = 1:1. Going to the salt:ligand ratio of 2:1 a dramatic, but spectacular structure transformation is observed in R=*t*Bu series from centrosymmetric P-1 to tetragonal chiral $P4_1$ bearing the $Cu_4Br_4(SC_4Slinker)Cu_4Br_4$ helices. An overall 3D structure is reached therein through the strong Cu – S(spacer)S – Cu inter-helice interactions.

In the C_4 2-butene spacer series the E-(trans) and Z-(cis) geometries of RSC_4SR dithioether influence on the composition and topology. E-(cis) isomers of $PhSCH_2CH=CHCH_2SPh$ lead to 2D planar layers in triclinic (P-1) structures with Cu_2Br_2 and Cu_2I_2 SBU's, whereas the cis (Z) isomer gives with CuI a 2D monoclinic (C2/c) luminescent structure with Cu_4I_4 SBUs.

A steric effect of substitutions on Ph group (Me ortho, tBu meta) of ditioether in saturated R'S(nBu)SR' series has been also checked with CuI. The effect is evidenced by the formation of 1D linear ribbons with the coordination of solvent (NCMe) molecules on the copper atoms.

A particular attention will be paid for discussion of Cu-Cu distances. Variable temperature X-ray studies have been performed in several cases in order to find the structure/thermo-luminescent relationships.

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