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In memory of Prof. Mihail REVENCO
Corresponding member of ASM

ACTIVATIN OF CHEMICAL AGENTS BY COORDINATION AND SYNTHESIS OF NEW MATERIALS AS BIOLOGICAL ACTIVE SUBSTANCES, CATALYSTS, ANALYTICAL REACTIVES AND MOLECULAR MAGNETS

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Investigations of Professor Revenco Mihail were dedicated on study of changes in thiosemicarbazidic fragment $H_2N(1)$-N(2)H- C(3)(=S)-$N(4)H_2$ under the coordination to the complex generator. At the starting point of such investigations three types of transformations in thiosemicarbazidic fragment were been known:

- Condensation via $H_2N(1)$ group with carbonylic derivatives and formation of thiosemicarbazones
- Cyclisation with α-dicetones and formation of heterocyclic compounds
- Thioalkylation with alkyl halogenures

The impact of coordination under the each atom of thiosemicarbazidic fragment was investigated and for the first time those results were implemented for obtaining of new materials with anti bacterial properties, catalysts, analytical agents, molecular magnets etc.:

- For the nitrogen atom N(1):
  - Monoelectronic redox reaction with formation of anionic radicals and its stabilization as ligands in coordination compounds
  - Selective oxidation of radicals and formation of bielectronic oxidation products
- For the nitrogen atom N(2):
  - Amplification of the acid properties of N(2)H group during coordination and by variation of the substitution in N(4) position
  - Intermolecular coordination of N(2) with formation of polymers
  - Amino-iminic tautomerism for thioalkilderivatives
- For the sulphur atom:
  - Change of coordination mode after thio-alkilation
  - Oxidative dimerisation with disulfuric bonds formation
- For the carbon atom C(3):
  - Reaction of total desulphurization
  - Reaction of reetherification and formation of O-alkyl derivatives
- For the nitrogen atom N(4):
  - Appearance of acid properties on $N(4)H_2$ group and its deprotonation after coordination
  - Reaction of amido-nitrosation
  - Reaction of nucleofilic addition and formation of symmetric ad asymmetric amminals
  - Amplification of photolytic properties under the coordination effects
  - Reaction of esterification
  - Reaction of condensation
  - Reaction of oxidative amidation

Ion Madan " The Knight of Knowledge and Devotion-Professor Mihail Revenco at his 60th Anniversary" BIOBIBLIOGRAPHY, Chisinau 2007, CEP USM