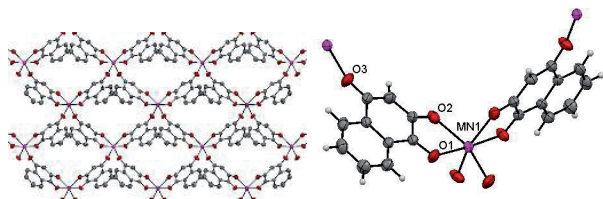


character. A similar behavior reported early for an analogue complex with lapachol suggest an electron transfer process between the metal center and the naphthoquinone [3].



[1] F.L.S. Bustamante, E.T. Souza, M. Lanznaster, M. Scarpellini, *Revista Virtual de Química* **2009**, 1 (2), 138-148. [2] A.S. Attia, Cortlandt G. Pierpont, *Inorganic Chemistry* **1997**, 36, 6184-6187. [3] F. Caruso, M.A. Martínez, M. Rossi, A. Goldberg, M.E. ChacónVillalba, P. J. Aymonino, *Inorganic Chemistry* **2009**, 48, 3529-3534.

Keywords: coordination polymer, lawsone, manganese complex

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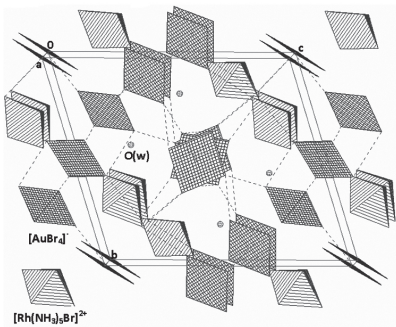
Synthesis and investigation of double complex salts involving [AuHal₄]⁻ anions

Evgeny Semitut,^a Pavel Plyusnin,^{a,b} Iraida Baidina,^a Yuri Shubin,^{a,b} Sergey Korenev,^{a,b} ^aNikolaev institute of inorganic chemistry, SB RAS, Novosibirsk, Akademika Lavrentieva avenue 3. ^bNovosibirsk state university, Novosibirsk, Pirogova 2, (Russia). E-mail: semitut@niic.nsc.ru

Double complex salts (DCS) are promising single-source precursors for preparation of ultrafine metal systems. The composition of a DCS can be represented with the general formula [ML_x]_m[M'L'_y]_n, where M, M' – a transition metal, L, L' – a neutral or charged ligand. Thermal decomposition of such compounds, occurring at relatively low temperatures, allows targeted preparation of metallic systems with composition strictly pre-determined by the stoichiometry of the original DCS [1].

DCS's [M(NH₃)₅Hal][AuCl₄]Cl·nH₂O (Hal = Cl, Br) and [M(NH₃)₅Hal][AuBr₄]₂·nH₂O (M = Ir, Rh; n = 0–1) have been synthesized and characterized with a number of physical chemical techniques. Crystal structures have been determined for all compounds. Single crystal X-ray diffraction analysis was carried out on a Bruker X8 APEX CCD-based diffractometer with MoK α -radiation at 150 K. The structures were solved by standard direct methods and refined anisotropically using the SHELX-97 program package [2]. All hydrogen atoms were located geometrically.

[M(NH₃)₅ Hal][AuCl₄]Cl·nH₂O are monoclinic, sp. gr. C2/m, [M(NH₃)₅Hal][AuCl₄]NO₃ are orthorhombic, sp. gr. Pnma. [M(NH₃)₅Hal][AuBr₄]₂·nH₂O crystallizes in the triclinic crystal system, sp. gr. P-1. It was shown that DCS's containing [AuCl₄]⁻ anions can be obtained with high yield (60-80%) with stoichiometry of M: Au (1:1) and DCS's containing [AuBr₄]⁻ with stoichiometry M: Au (1:2). Compounds with [AuBr₄]⁻ have structures with stacks of complex anions along a axis (figure shows packing



for [Rh(NH₃)₅Br][AuBr₄]₂·H₂O) with Au...Au distances 3.966(1) – 5.816(1) Å.

The thermal decomposition of the DCS's in different atmospheres has been examined by thermal analysis. The mechanism of the process has been suggested on the basis of the data of thermal analysis, powder X-ray diffraction and IR spectroscopy. It has been demonstrated that ultrafine powders of solid solutions Ir-Au and Rh-Au can be prepared on thermal decomposition of the synthesized compounds. Phase composition and particle sizes of the bimetallic products have been found to be essentially determined by the process conditions: atmosphere, temperature, heating rate.

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[1] S.V. Korenev, A.B. Venediktov, Yu.V. Shubin, S.A. Gromilov, K.V. Yusenko, *Journal of Structural Chemistry* **2003**, 44, N1, 46-59. [2] G.M. Sheldrick, *Acta Crystallogr.* **2008**, A64, 112.

Keywords: crystal structure analysis, gold compounds, thermal decomposition.

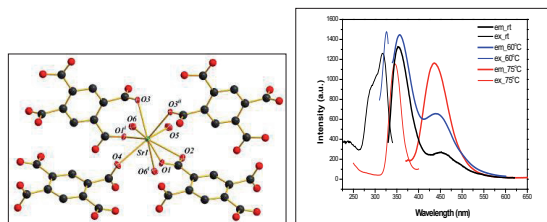
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Assembly a new water-insoluble strontium metal-organic framework and its luminescent studies

Chia-Her Lin, Martín Hsin-Kuan Liu, Jun-Xiang Zhan, Wei-Cheng Lin, Ching-Che Kao, Sheng-Han Lo, *Department of Chemistry, Chung Yuan Christian University, 200, Chung Pei Road, Chung Li, (Taiwan)*. E-mail: chiaher@cycu.edu.tw

The research in the field of metal-organic frameworks (MOFs) has grown exponentially in the last decade due to potential applications of MOFs such as gas storage, catalysis, magnetism, luminescence, and gas separation. Recently, we have reported a new magnesium complex with BTEC which can be easily prepared by direct-mixing method starting from the acid, metal hydroxide, and water.¹ It is desired to apply such a kind of environmentally friendly and efficient chemical processes to the syntheses of diverse chemical compounds, such as metal-organic frameworks or metal coordination polymers. The compound [Sr₂(BTEC)(H₂O)₄]·2H₂O (**1**) (H₄BTEC = benzene-1,2,4,5-tetracarboxylic acid) is a new strontium metal-organic framework which is insoluble in water and emits strong luminescence at around 437 nm after dehydration. Single-crystal X-ray diffraction shows that the structure of compound **1** possesses an extended 3D framework. Each SrO₉ polyhedron shares its three edges with other three SrO₉ polyhedra forming thus an inorganic layer lying in the bc plane. The layers are pillared by the BTEC ligands and form a 3D metal-organic framework.



[1] H.K. Liu, T.H. Tsao, C.H. Lin, V. Zima, *CrystEngComm* **2010**, 12, 1044.

Keywords: strontium complex, metal-organic framework, luminescent