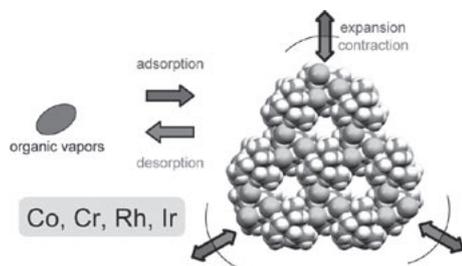


and organic vapors accompanying the expansion of channel in its crystal structure.[1] To investigate the possibility of single crystal of tris-ethylenediamine metal complexes as ionic single-crystal hosts for vapor adsorption, a series of adsorbency of single crystals of $[M^{III}(en)_3]Cl_3$ ($M = Co, Cr, Rh, Ir$) were studied. All complexes have channels in their crystal structures, which dynamically and reversibly change their size with vapor adsorption, and show similar vapor adsorbency like the adsorption behavior of $[Co(en)_3]Cl_3$. [2]

[1] S. Takamizawa, T. Akatsuka, T. Ueda, *Angew. Chem. Int. Ed.*, 47(9), 1689-1692 (2008).

[2] S. Takamizawa, M. Kohbara, T. Akatsuka, R. Miyake, submitted



Keywords: gas-solid inclusion reaction, solid-state structural changes, ionic crystals

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Synthesis and properties of dioxalato cuprates (II) and ruthenium (III) aminocomplexes salts

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Double complex salts (DCS) are of great interest as precursors of bimetallic solid solutions and intermetallics. Solid solutions based on platinum group metals have high catalytic activity. Thermolysis such single-source molecular precursors under low temperature (400 °C) allows to prepare bimetallic powders with definite ratio of components and particles size about 5-10 nm. This work related to synthesis of complexes contained simultaneously ruthenium and copper and study of their metallic thermolysis products. In the field of this work the following DCS were synthesized: $[Ru(NH_3)_5Cl][Cu(C_2O_4)_2] \cdot H_2O$ (I), $[RuNO(NH_3)_4OH][Cu(C_2O_4)_2] \cdot 1.5H_2O$ (II). Obtained DCS were characterized by IR-spectroscopy, elemental analysis, XRD and X-ray single crystal analysis. This is crystallographic data: (I) $a = 7.6277(5)$, $b = 13.1052(8)$, $c = 14.9640(7)$ Å, $b = 97.852(2)$, $V = 1481.81(15)$ Å³, $P2_1/n$, $Z = 4$, $D_x = 2.148$ g/cm³; (II) $a = 7.1121(2)$, $b = 10.3941(3)$, $c = 10.6288(3)$ Å, $\alpha = 97.0340(10)$, $\beta = 107.6150(10)$, $\gamma = 92.8600(10)$, $V = 740.10(4)$ Å³, $P-1$, $Z = 1$, $D_x = 2.276$ g/cm³. Structures are build of discrete $[Ru(NH_3)_5Cl]^{2+}$, $[RuNO(NH_3)_4OH]^{2+}$, $[RuNO(NH_3)_5]^{2+}$ cations and $[Cu(C_2O_4)_2]^{2-}$ anions. Thermolysis of obtained salts under inert and reduction atmosphere was studied. The XRD investigation of thermolysis products was carried out. Decomposition of salts under helium atmosphere begin at 140 - 150°C, occur in 2 stages and finish at 520°C (I), at 300°C (II). Thermolysis products are Ru, RuO₂, CuCl, Cu₂O. Decomposition of complexes under hydrogen atmosphere also studied. Product is Ru_{0.8}Cu_{0.2}. This work was supported by the RFBR grants 07-03-01038-a, 08-03-00603-a.

Keywords: double complex salt, ruthenium, copper

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Synthesis and crystallographic study in the PbO-Bi₂O₃-V₂O₅ System: Pb_{3-x}Bi_{2/3x}V₂O₈

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PbO-Bi₂O₃-V₂O₅ System is of current interest owing to its use to generate novel ion conducting materials [1]. Pb₃V₂O₈ displays two structural phase transitions at 373 and 273 K [2]. The first order phase transitions have been studied both by neutron and X-ray powder diffraction [3]. The high temperature γ phase of Pb₃V₂O₈ adopts the palmerite structure [4, 5]. In this context, polycrystalline samples in the series Pb_{3-x}Bi_{2/3x}V₂O₈ ($x = 0.2$ to 1.5) have been synthesized by solid-state route. The compositions $x = 0.2$ to 0.7 form a solid solution with a structure similar to γ form of Pb₃V₂O₈, as confirmed by powder diffraction studies while Pb₃BiV₃O₁₂ ($x = 1.0$) was isolated from a mixture of two phases. Single crystals of both phases representing two new vanadates were grown by melt-cool technique. Pb_{2.5}Bi_{1/3}V₂O₈ ($x = 0.5$) and Pb₃BiV₃O₁₂ ($x = 1.0$), have been analysed by single-crystal X-ray diffraction. Pb_{2.5}Bi_{1/3}V₂O₈ crystallizes in a trigonal system, space group $R-3m$, with $a = 5.755(6)$ Å, $c = 20.317(4)$ Å, $V = 582.74(1)$ Å³ and $Z = 3$ whereas Pb₃BiV₃O₁₂ is cubic (eulytite), space group $I-43d$, with $a = 10.749(2)$ Å, $V = 1241.9(1)$ Å³ and $Z = 4$. It is of interest to note that this study for the first time describes the structural motifs formed by a eulytite vanadate.

[1] Boivin, J. C. & Mairesse, G. *Chem. Mater.*, 1998, **10**, 2870.

[2] Isupov et.al, *Sov. Phys. Solid State*, 1965, **24**(5), 844.

[3] Kiat et.al, *J. Solid State Chem.*, 1991, **91**, 339.

[4] Durif, A. *Acta Cryst.*, 1959, **12**, 420.

[5] Susse, P. & Buerger, M. J. *Z. Krist.*, 1970, **131**, 161.

Keywords: synthesis, solid solution, powder and single crystal diffraction

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Photoinduced surface relief grating formation using single crystals of azobenzene derivatives

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Surface relief grating (SRG) formation by irradiation of amorphous films of azobenzene-containing polymers with two coherent laser beams has recently received a great deal of attention in view of both academic interest and potential technological applications. We have been performing studies of the photoinduced SRG formation using azobenzene-based photochromic amorphous molecular materials. Photoinduced SRG formation is believed to take place by mass transport induced by *trans*-*cis* and *cis*-*trans* isomerizations of azobenzene chromophore. Several models for the mechanism of the SRG formation have been proposed; however, the details have not been clear yet. In contrast to amorphous materials, it is of interest to