of x=0.7, 0.8 and 0.9 was almost same one of NH_4IO_3. Meanwhile, the crystal structure of the middle compositions (x=0.4, 0.5 and 0.6) was different from both of $RbIO_3$ and NH_4IO_3.

The measurement of DSC in temperature range from room temperature to 135°C, $Rb_{1-x}(NH_4)_xIO_3$ with x=0.0 to 0.6 indicate no anomaly. However, single anomaly in DSC measurement was observed in the each sample of x=0.7 to 1.0. From a reported temperature of ferroelectric phase transition in NH_4IO_3 [3], it was considered that these DSC anomalous temperatures were equivalent to temperature of the ferroelectric phase transition. These temperatures of ferroelectric phase transition were decreased with decreasing the value of composition x from x=1.0 to x=0.7. The values of the entropy change at the ferroelectric phase transition of x=0.8, 0.9 and 1.0 were obtained from the value of these heat anomaly in DSC measurement of each samples. As a result, it was considered these ferroelectric phase transition was an order-disorder type.

Now, we are carrying out the low temperature DCS measurement and the identification of the crystal structure of middle composition region (x=0.4, 0.5 and 0.6). In congress, we will show the crystal structures and DSC measurements, and will discuss the phase diagram and the mechanism of phase transition in $Rb_{1-x}(NH_4)_xIO_3$ mixed crystals.

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Keywords: rubidium_ammonium_iodate_mixed_crystal, X-ray_diffraction, differential_scanning_measurement

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New molybdenum peroxocomlexes as a promising catalysts

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Molybdenum organometallic complexes and oxides catalyze epoxidation reactions in homogenous and heterogenous catalysis. In addition, molybdenum complexes, in particular peroxomolybdates show structural and functional analogy to enzymes containing Mo atom, therefore are active in various reactions [1]. Most of the molybdenum catalysts play an important role in environment protection. They are used in desulphurization of petroleum and coal derived products, as sulphur dioxide causes a serious deterioration of air quality [2].

In our laboratory almost a dozen of a new peroxomolybdates have been obtained, they have been thoroughly investigated by X-ray and spectroscopic methods [3]. Recently, three new peroxocomplexes were synthesized from ammonium molybdate solution with addition of nicotinic acid and hydrogen peroxide (compounds **I-III**, see Table 1). In Figure 1a) anion coordination polyhedron and in 1b) asymmetric unit of peroxocomplex **I** are presented. The molybdenum atom is coordinated by seven oxygen atoms, among them there are two peroxo-groups lying in the same plane, one terminal O atom and two bridging oxygen atoms. Compound **I** is an ammonium salt, compound **II** is a salt of the same acid with protonated nicotinic acid. In Table 1 summary of crystal data of new peroxo-molybdenum complexes are presented.

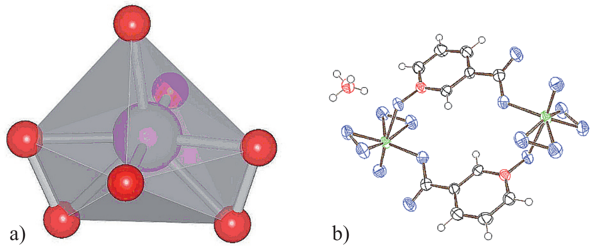

Figure 1, a) Anion coordination polyhedron and b) asymmetric unit of compound **I** (Mo-green, O-blue, N-red, C-grey).

Table 1. Crystal data of new peroxo-molybdates with nicotinic acid.

Chemical formula	$C_{12}H_{18}Mo_2N_4O_{16}$ **I**	$C_{24}H_{22}Mo_2N_4O_{22}$ **II**	$C_{12}H_{12}Mo_2N_2O_{16}$ **III**
SG	P-1 (2)	P2$_1$/c (14)	Pc (7)
Cell parameters [Å, °]	a=6.687(4) b=6.965(4) c=12.012(7) α=76.421(4) β=77.434(4) γ=69.478(4)	a=7.504(2) b=28.473(7) c=7.777(2) β=111.425(1)	a = 5.416(3) b = 5.350(2) c =16.976(7) β = 106.230(3)
V [Å^3], Z	503.66(2), 1	1546.82(3), 2	472.29(4), 2
R1; wR2	0.0422; 0.0902	0.0282; 0.0622	0.0508; 0.1342

Some peroxo-nicotinic acid complexes of Mo, have been investigated by Djordjevic et al., [4], their samples were not investigated by X-ray methods, but with the use of chem. analysis, spectroscopic, ^{1}H and ^{13}C NMR studies they proposed structures which differ from ours.

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Indialite and cordierite in glass ceramics for millimeterwave dielectrics

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Dielectrics for millimeterwave communications are expected to have low dielectric constant and high quality factor (high *Q*). Cordierite ceramics is a candidate for millimeterwave dielectrics, because of low dielectric constant 4.7, and high *Qf* more than 200,000 GHz. Cordierite has two polymorphs: disordered phase indialite (hexagonal, *P*6/*mcc* (No. 192)) and ordered phase cordierite (orthorhombic, *Cccm* (No.66)). As Ni-doped cordierite ceramics with good dielectric properties tend to disordered, indialite was expected to have high *Qf*. As indialite