framework upon dehydration/ rehydration processes, due to reversible movements of some organic moieties and hopping of some nickel atoms. The ability of MIL-77 inorganic network to accommodate glutarate derivatives was demonstrated by the use of 3-methylglutaric acid (3-MG) and 2-methylglutaric acid (2-MG). Moreover, we have shown that the handedness of the inorganic helices could be imposed by the configuration of the enantiopur 2-MG ligand. With cobalt ion, the synthesis of bulk homochiral solid has been confirmed by optical circular dichroism [2].
Here, we will summarize the structural features and the properties of this unique family of materials.

[1] Guillou N.; Livage C.; Drillon M; Férey G. ; *Angew. Chem. Int. Ed*, 2003, 42, 5314. [2] Livage C; Guillou N; Rabu P, Pattison P., Marrot J., Férey G. ; *Chemm. Commun*., 2009, 30, 4551.

Keywords: porous solids, chiral compounds, thermal transformation

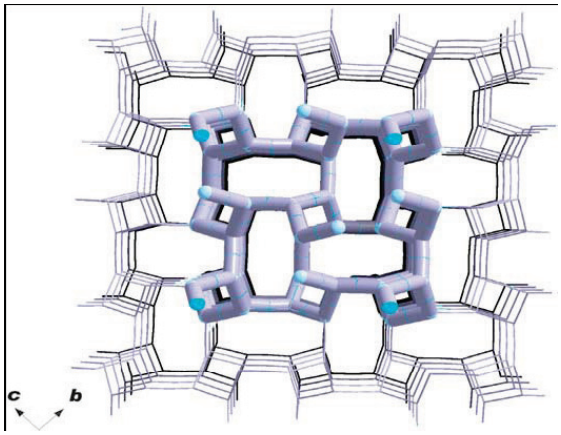

Fig. 1: View of the cubic (10, 3) chiral network

FA2-MS14-P16

Impact of pyroelectric $LiNbO_3$ and $LiTaO_3$ on water, organic dyes and *E. coli.* Emanuel Gutmann[a], Annegret Benke[b], Katharina Gerth[b], Erik Mehner[a], Christin Klein[a], Udo Krause-Buchholz[c], Wolfgang Pompe[b], Dirk C. Meyer[a,d]. [a]*Institut für Strukturphysik, TU Dresden, Germany.* [b]*Institut für Werkstoffwissenschaft, TU Dresden, Germany.* [c]*Institut für Genetik, TU Dresden, Germany.* [d]*Institut für Experimentelle Physik, TU Bergakademie Freiberg, Germany.*
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$LiNbO_3$ and $LiTaO_3$ materials of polar crystal structure exhibit a spontaneous polarization that can be changed by temperature (pyroelectric effect). This leads to the generation of surface charges which are neutralized preferentially by external screening charges attracted from surrounding media [1]. In this context, we have investigated the impact of thermally excited pyroelectric $LiNbO_3$ and $LiTaO_3$ on the redox behavior of noble metal salts, and organic dyes in aqueous solutions. Based on various experimental results such as gold salt reduction, methylene blue degradation and conversion of dichlorofluorescin diacetate, a reaction mechanism including electron transfer and subsequent hydroxyl radical and hydrogen generation is proposed. Reaction rates strongly depend on the total surface of the pyroelectric particulate material in direct contact with the medium. As hydroxyl radicals are highly reactive oxidants used for disinfection purposes, also successful bactericidal tests with *Escherichia coli* have been performed.

[1] Yun Y., Kampschulte L., Li M., Liao D., Altman E.I., *J. Phys. Chem. C*, 2007, 111, 13951.

Keywords: polar crystal, pyroelectric effect, hydroxyl radical

FA2-MS14-P17

Synthesis of new stoichiometric barium bismuth borates $BaBi_2B_2O_7$, $BaBi_{10}B_6O_{25}$, $BaBi_8B_2O_{16}$. Martun Hovhannisyan[a], Rafael Hovhannisyan[a], Hovakim Alexanyan[a], Nikolay Knyazyan[b]. [a]*Scientific-Production Enterprise of Material Science, Yerevan, Armenia.* [b]*Institute of General and Inorganic Chemistry of NAS RA, Yerevan, Armenia.*
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Interest to ternary alkali free bismuth borate systems M_xO_y-Bi_2O_3-B_2O_3 (M=Zn,Sr,Ca,Ba) studies has amplified recently. Various research groups worked in this area and revealed a number of ternary compounds, determined their structure, optical and nonlinear optical properties. Well known research groups payd special attention to BaO-Bi_2O_3-B_2O_3 system studies and have revealed four ternary stoichiometric $BaBiBO_4$ [1], $BaBiB_{11}O_{19}$, $BaBi_2B_4O_{10}$ and $Ba_3BiB_3O_9$[2,3] compounds in it.
Using methodology based on glass samples investigation was more effective at BaO-Bi_2O_3-B_2O_3 system phase diagram construction, than a traditional technique based on solid phase sintered samples studies. Because DTA curves of glasses, to the contrary DTA curves of solid state sintered samples, indicates their all characteristics temperatures, includes exothermal effects of glass crystallizations and endothermic effects of formed crystalline phases melting. Using different melts cooling rates we at first have determined large glass-forming field in the BaO-Bi_2O_3-B_2O_3 system, which includes all eutectics in the binary Bi_2O_3-B_2O_3, BaO-B_2O_3 and BaO-Bi_2O_3 systems and covers majority of the concentration triangles , reaching up to 90 mol% Bi_2O_3. BaB_4O_7, $Ba_2B_{10}O_{17}$, BaB_8O_{13}, $Bi_4B_2O_9$, $BiBO_3$, $Bi_3B_5O_{12}$, BiB_3O_6 and $Bi_2B_8O_{15}$ binary compounds formed stable glasses. BaB_2O_4, $Ba_2B_2O_5$ and $Bi_{24}B_2O_{39}$ compounds are in the area of glasses formed by high cooling rates (10^3-10^4)K/c.
Phase diagrams construction have allowed us to reveal three new $BaBi_2B_2O_7$ and $BaBi_{10}B_6O_{25}$ congruent melted at 725 and 690°C respectively and $BaBi_8B_2O_{16}$ incongruent melted at 725 compounds in the BaO-Bi_2O_3-B_2O_3 system through same compositions glass crystallization, because all ternary compounds have enough glass forming ability.
Single crystals of $BaBi_{10}B_6O_{25}$ were grown by cooling of a melt with the stoichiometric composition. Preliminary melted glass powder of the stoichiometric $11.11BaO\cdot 55.55Bi_2O_3\cdot 33.33B_2O_3$ (mol%) composition was heated in a uncovered quartz glass ampoule up to 750°C at a rate 10K/min. After 2h exposition at this temperature, the melt was cooled at a rate 0.5 K/h. Single crystals with size up to 1.66×0.38×0.19 mm^3 were grown.
The X-ray characteristics of new compounds were determined. X-ray powder diffraction patterns of $BaBi_2B_2O_7$ and $BaBi_{10}B_6O_{25}$ could be indexed on an orthorhombic cell with lattice parameters as follows: for $BaBi_2B_2O_7$ a=11.818Å, b=8.753 Å, c=7.146Å, cell volume V= 739.203 Å, Z=4; and