sepiolite ideal composition for two of them, which origin was from two thick (>1m) high grade sepiolite layer in Vicálvaro and Barajas (Table). Specimens sampled from less developed sepiolite layers showed a slight excess in F, Si and lower Mg occupation than ideal sepiolite [4]. It is observed a correlation between the high fluorine content and low magnesium occupation of the studied samples with the loss of ideal structure.

Sample	Corrected Formulae
TS4	$Si_{12.02}(Mg_{7.97})((OH)_{3.14}F_{0.86})$
S41733	$Si_{12.04}(Al_{0.05}Mg_{7.84})((OH)_{3.35}F_{0.65})$
S4284	$Si_{12.17}(Al_{0.03}Mg_{7.63})((OH)_{2.80}F_{1.20})$
S13392	$Si_{12.16}(Mg_{7.68})((OH)_{3.04}F_{0.96})$

Ordering and degree of occupancy of Mg and F ions are being studied in order to explain the structural anomalies found in sepiolite.

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Keywords: sepiolite, structural anomalies, fluorine

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Investigations of barium and strontium dicarboxylates – 'new metaloorganic compounds'

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Synthesis and study of new salts of dicarboxylic acids with metals reveal new types of structures, which are interesting from the viewpoint of crystal engineering and practical applications. These compounds can be layered, three dimensional micro- and macroporous materials. Properly selected dicarboxylic acids synthesized with appropriate compounds used as templates may be 'building blocks' of complex three-dimensional hierarchical materials, [1]. Some salts of uranium and simple dicarboxylic acids are known and well characterized [2], additionally the poor solubility of this kind of compounds of metals such as calcium is known. Therefore, these systems can be used in the design of materials which may be useful for removing of heavy metals from solutions. Increasing interest in the compounds such as MOF (Metal-Organic Frameworks) is related to their possible use, similar to zeolites, including sorption and gas separation, ion exchange and catalytic properties.

In our study we obtained a group of barium and strontium dicarboxylates with chain length from 5 to 12 carbon atoms. For all obtained compounds XRPD studies were performed (phase analysis and lattice parameters). In four cases single crystal analysis was also performed (Table 1). Compound (**I**) forms isolated layers of the Ba ions and molecules of glutaric acid, while the structures (**II-IV**) are built of the Ba-O layers connected with each other by dicarboxylic acids. Further structure studies for the obtained substances, using both single crystal and powder methods are in progress. Additionally, obtained samples were characterized by thermal decomposition and spectroscopic studies.

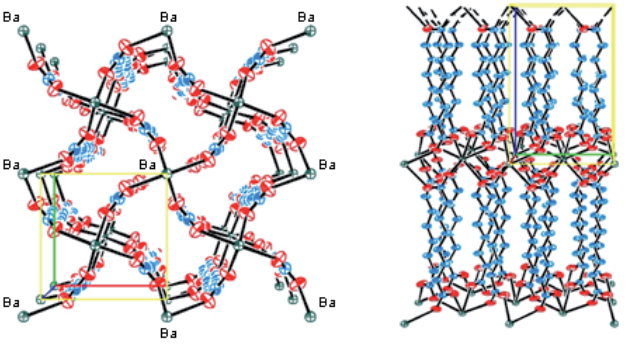

Fig. 1. Structure of $BaC_{16}H_{26}O_8$ **(II)**: view along c (left), packing of the molecules in the direction perpendicular to the layers (right)

Table 1. Cell parameters obtained by single crystal analysis

Chemical formula	$BaC_5H_6O_4{\cdot}6H_2O$ **(I)**	$BaC_{16}H_{26}O_8$ **(II)**	$SrC_9H_{14}O_4$ **(III)**	$SrC_{24}H_{40}O_8$ **(IV)**
SG	Pnma(62)	P-4b2(117)	I222(23)	Ccca(68)
a [Å]	12.149(1)	12.0906(4)	8.4750(2)	36.0410(1)
b [Å]	7.532(1)	12.0906(4)	8.8411(3)	9.3710(3)
c [Å]	13.294(1)	13.0713(5)	28.0506(7)	7.9310(3)
V [Å^3]	1187.5(2)	1910.8(1)	2101.7	2678.6
wR2, R1	0.0497, 0.0200	0.0337, 0.0137	0.1445, 0.0691	0.1461, 0.0612

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Crystal structure of new alkaline diphosphates in the $A_2MnP_2O_7$ family

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Two new members of the $A_2MnP_2O_7$ diphosphate family have been evidenced: $Rb_2MnP_2O_7.H_2O$ and $Cs_2MnP_2O_7$. The crystal structures of both compounds were resolved and refined using single crystal X-ray diffraction. The crystals of the rubidium based phase presented systematically a non-merohedral twinning so a Rietveld refinement of powder XRD data was also performed.