tetrahedra and the very rare triarsenate groups As₃O₁₀ which together serve as building units to form an intersecting tunnel structure with the Cs⁺ cations located at the intersections of tunnels. Crystals of Ca(GuOH)₃H₂As₂O₇ were grown by a high-temperature, high-pressure hydrothermal method. It crystallizes in the monoclinic space group C2/c with a = 6.467(4), b = 6.051(1), c = 16.457(2) Å, β = 92.99(2)°. V= 642.2(3) Å³, Z = 2, R = 0.045 for 929 independent reflections with I > 2.5σ(I). The structure contains infinite chains of Ga₂O₆ octahedra sharing edges. These chains are connected by arsenate groups to form layers in the ab-plane. The layers are linked by Cs⁺ cations and hydrogen bonding.

**PS08.00.27 RIETVELD REFINEMENT OF Na₃CaMg(PO₄)₂, NH₄Al₂(SO₄)₂(OH)₆, J. Maixner, H. Hejdova, Central Laboratories, Institute of Chemical Technology, Technická 5, 166 28 Praha 6, Czech Republic.**

The structure analysis of Na₃CaMg(PO₄)₂ and NH₄Al₂(SO₄)₂(OH)₆ has been made by means of X-ray powder diffraction using Rietveld method.

The first compound is known as the mineral brianite(1) and it is structurally isomorphous with the mineral merwinite Ca₀.₆(PO₄)₁.₆(OH)₃. The second compound is structurally isomorphous with KAl₃(SO₄)₂(OH)₆. None of these compounds has got an entry in ICSD or PDF-2 databases. Therefore, we have refined the structures of these minerals and prepared powder cards for them.

The initial cell parameters were evaluated with TREOR 90(4) and the framework atom positions with temperature factors were taken from the literature. The theoretical powder patterns were calculated and their comparison with measured data undoubtedly confirmed isomorphism of solved structures.

The X-ray data were collected on DRON-UM-1 powder diffractometer with CuKα radiation (7 = 120° 2θ range, 0.02° step size, 5 seconds per step). The Howard's version of DBWS 4.1(5) was used for the Rietveld refinement. The table 1 summarises final cell parameters and R factors for both structures.

<table>
<thead>
<tr>
<th>θ (°)</th>
<th>d(Å)</th>
<th>b(Å)</th>
<th>c(Å)</th>
<th>h</th>
<th>v(Å³)</th>
<th>Rwp</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.58(5)</td>
<td>5.204(1)</td>
<td>9.119(1)</td>
<td>0.769(2)</td>
<td>63.5(1)</td>
<td>8.12</td>
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<tr>
<td>7.007(1)</td>
<td>7.007(1)</td>
<td>17.618(1)</td>
<td>120.0</td>
<td>749.3(1)</td>
<td>10.55</td>
<td></td>
</tr>
</tbody>
</table>

(2) P. B. Moore & T. Araki, Am. Mineralogist, 52, 1535 (1972)
(3) S. Manchetti, Neues Jahrbuch für Mineralogie, 406 (1976)
(4) P. E. Werner, Z. Krist., 120, 375 (1964)

**PS08.00.28 QUANTITATIVE RELATIONS AMONG CRYSTAL STRUCTURES ZEOLITES OF NATROLITE - EDINGTONITE GROUP.**

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The comparative quantitative evaluation of crystal structure similarity degree was applied to small group of zeolite minerals. A procedure of quantitative evaluation is based on the concept of mapping [1]. A derived structure (2) is called to be related to a basic one (1) if it can be mapped by a pair of matrices (A, S). A is a non-singular 3x3 matrix, S is a (3x1) column matrix. M=ASM is called the mapping of the relationship. The special computer program was created [2]. The type of symmetry relationship among more than 10 structures of natrolite-edingtonite-scolecite-thomsenit-kalibomite series was shown. There is a strong specific influence of cation type on the tetrahedral network. The influence of different cations (in row H,Na,K-Rb-Ca-Ba) on other atomic positions in the structure is quantitatively estimated. The role of water molecules was discussed.


**PS08.00.29 STRUCTURES OF SrSiO₃ AND SrGeO₃.**

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I succeeded in synthesising SrSiO₃ and SrGeO₃ single crystals. The space group is C2/c and the crystal data are: a=12.305(4), 12.533(3) Å; b=7.129(2), 7.262(1) Å; c=10.861(2), 11.259(3) Å; β=111.60(2), 111.30(2)° for SrSiO₃ and SrGeO₃, respectively.

Hilmer (1962) studied the crystal structure of SrGeO₃ by Weissenberg method and Nadezhina, Pobedinskaya, Ilyukhin, Nikishina and Belov (1977) studied it by four-circle diffractometer. According to my results, it may be said that Hilmer's crystal is same polymorph as mine but he misunderstood its unit cell. On the contrary, it is certain that Nadezhina's one is another polymorph having SrGeO₃ contents. I can summarized: (1) Both structures include the layers comprised by SiO₃ or GeO₃ three-membered rings and the layers comprised by SrO₆ polyhedra. (2) They are piled up along c direction alternately. (3) In viewpoint of the polytypic consideration, my crystals are classified into the 6-layers group which are studied by Yamanaka and Mori (1981).


**PS08.00.30 CHARACTERIZATION OF UO₂⁺ EXCHANGE Y-ZEOLITE.**


The present study involves the incorporation of uranyl ion into Y-zeolite. The Na⁺- UO₂⁺ exchange in the framework was measured by neutron activation analyses. The X-Ray diffraction patterns of the materials have been studied in order to understand the behavior of uranyl ions in the zeolite and in order to present the unknown crystal data.

The Y-zeolite framework distort in response to the cation present in the structure. Hence the position of the UO₂⁺ in the structure was inferred from powder X-Ray diffraction data.