Thursday, May 24, 2001
CRystal Structures and Mineral Behavior II
8:25 a.m. Commonwealth Room

Chairs: J. E. Post
N. L. Ross
D. Veblen

Baronnet A. * [KEYNOTE] Boudier F.
Microstructural and Microchemical Aspects of Serpentinization [#3382]
As seen by TEM and AEM the mesh and bastite textures of the Oman ophiolite display a two-stage serpentinization process. Structurally-constrained alteration reactions evolve to less pseudomorphic as the system open.

Mellini M. * Drabek M. Klika Z. Czendlik R. Weiss Z. Rieder M.
Crystal Structures and Cesium-Leaching of Synthetic Cesium-Silicates [#3165]
Structure analysis of synthetic Cs-tetra-ferri-annite, Cs-annite and CsAlSiO₄ show the first as a phase useful to fix cesium radiosiotopes. Leaching of these phases, as well of Cs-montmorillonites and Cs-zeolites, confirm the structural prediction.

Burns P. C. *
Structures of Uranyl Minerals and Compounds Containing Tetrahedrally Coordinated Hexavalent Cations [#3263]
The structural connectivity of uranyl minerals and compounds containing tetrahedrally coordinated hexavalent S, Cr and Mo will be examined. The unpublished structures of 12 recently studied minerals and compounds will be presented.

Locock A. J. * Burns P. C.
Investigations of the Autunite and Meta-Autunite Groups: Crystal Structure Refinements of Synthetic Zeunerite, Metatorbernite, Trögerite and Chernikovite [#3100]
In an examination of the details of the interlayers and hydrogen bonding in the autunite and meta-autunite groups, Cu-U-As/P and hydronium-U-As/P species were synthesized and their crystal structures refined.

Thompson R. M. * Downs R. T. Lienert C.
Ideal Pyroxene Topologies [#3149]
Ideal pyroxene structures have been created based upon closest-packed stacking sequences. An algorithm for determining cells, positional parameters, and space groups for all such structures will be presented.

A Comparison of Procrystal and First-Principles Crystal Electron Density Distributions with Application to Understanding the Phase Changes in Pyroxenes [#3902]
The phase changes in pyroxenes that are observed at temperature or pressure can be rationalized in terms of bonded interactions between M2 and bridging O3.

Flemming R. L. * Luth R. W.
29Si MAS NMR Study of Diopside-Ca-Tschermak Clinopyroxenes: Detecting Both Tetrahedral and Octahedral Al Substitution [#3640]
29Si MAS NMR of Di-CaTs solid solution is sensitive to Al in both M1 and T sites. Substitution of Al for Mg at M1 shields Si (versus deshielding of Si on substitution of Al for Si at T sites). 70% of Si in CaTs is locally ordered into Al-O-Si-O-Al.

Ross N. L. *
Compression of Octahedral Framework Structures [#3412]
This presentation investigates whether rigid unit mode theory can adequately describe the high-pressure behavior of octahedral frameworks.
Prewitt C. T. * Dera P. Doctor N. Z. Hemley R. J.
High-Pressure Phase of Silica from the Martian Meteorite Shergotty [#3077]
X-ray diffraction data from a sample of SiO$_2$ extracted from the Shergotty meteorite confirm that it has the $\alpha$-PbO$_2$ crystal structure. SIMS analyses show that it is water-bearing (30–71 ppm, H$_2$O) and has an extraterrestrial hydrogen isotope signature.

Groat L. A. * Chakoumakos B. C.
A Single-Crystal Neutron Diffraction Study of the Amblygonite (LiAlPO$_4$F)--Montebrasite (LiAlPO$_4$OH) Solid Solution [#3753]
The anion solid solution exhibited by the amblygonite (LiAlPO$_4$F)-montebrasite (LiAlPO$_4$OH) solid solution was studied using single-crystal neutron diffraction and NMR at low temperatures.

Liu J. * Liu J. Liu C. Qi F. Liu Y. Li J.
Some New Data on Mineralogy of the Stibnite-Antimonselite Series [#3234]
Transitional members in the stibnite-antimonselite system have been discovered by the authors in stratabound gold deposits at La’erma and Qiongmo in western Qinling, China. The higher the Se content, the bigger the cell parameters.