Wednesday, May 23, 2001
METAMORPHIC PROCESSES
8:25 a.m. Blue Ridge/Allegheny Room

Chairs: J. Beard
J. G. Blencoe

Frei R. * Blichert-Toft J.
Complex Sm-Nd and Lu-Hf Isotope Systematics of Metamorphic-Metasomatic Garnets from the Earth’s Oldest Oceanic Crustal Sequence (Isua Supracrustal Belt, West Greenland) [#3011]
This study emphasizes the need for caution in the interpretation of Sm-Nd and Lu-Hf geochronological data of garnets. Highly refractory inclusions can severely bias the parent-daughter element budgets of the affected decay scheme.

Alirezaei S. * Cameron E. M.
Application of Laser Combustion Technique to the Study of Sulfur Isotopes in Metamorphic Rocks from Bamble Sector, S. Norway [#3086]
Q-switched Nd-YAG laser is capable of sulfide combustion; fractionations are reproducible. Variations of sulfur isotope ratios in various rocks from Bamble, Norway, indicated that no isotopic homogenization occurred in spite of high-grade metamorphism.

Cavosie A. J. * Sharp Z. D. Selverstone J.
Co-Existing Aluminum Silicates in Quartz Veins: A Quantitative Approach for Determining Equilibrium Using Oxygen Isotopes with Applications to Thermobarometry [#3826]
This study uses oxygen isotopes, mineral textures, and phase relations to quantitatively demonstrate equilibrium conditions between co-existing aluminum silicates in quartz veins from the northern Front Range, Colorado.

Zack T. Tomascak P. Rudnick R. L. McDonough W. F. *
Li Isotope Fractionation During Slab Dehydration? Implications from Studies of Subduction-related Eclogites and Associated Garnet Mica Schists [#3768]
Li isotope data from 2 GPa eclogites and surrounding mica schists show light and uniform Li isotopic compositions, which may indicate fractionation of Li isotopes during slab dehydration.

Watson E. B. * Cherniak D. J.
Lattice Diffusion and Solubility of Argon in Quartz [#3279]
Lattice diffusion and solubility of Ar in quartz were characterized by heating single crystals at 500–900°C in pressurized Ar. RBS depth profiling of Ar yielded a typical solubility of ~2500 ppm; logD(Ar) ~ –20 at 900°C and ~–21.5 at 500°C (D in m²/s).

Baxter E. F. * DePaolo D. J. Renne P. R.
Importance of the “Transmissive Timescale” for Ar in the Crust and a Hypothesis for Local Non-K Bearing Mineral Sinks for Ar [#3702]
The amount of excess ⁴⁰Ar in a system depends on the transmissive timescale. Rapid bulk Ar diffusivity or fluid velocity is required to prevent excess ⁴⁰Ar buildup. Alternatively, local non-K bearing mineral sinks could prevent excess Ar buildup.

Blencoe J. G. * Naney M. T. Anovitz L. M.
A New Experimental Method for Determining Liquid-Vapor Equilibria in the CO₂-H₂O System at High Subcritical Temperatures [#3262]
A highly precise and accurate vibrating U-tube technique was developed to determine the upper baric stabilities of liquid-vapor assemblages in the CO₂-H₂O system at high subcritical temperatures. The method yielded excellent results in experiments performed at 300°C.
Tracy R. J. * Welch P.

Evidence of Late Proterozoic or Early Paleozoic Saprolite Preserved in the Interiors of Devonian Regional Metamorphic Garnets? [#3810]

Chemistry of pelitic schist from Vermont and the nature of chemical zoning and mineral inclusions in large garnets suggest that the rock represents the metamorphic equivalent of an aluminous weathered horizon or saprolite of late Precambrian or Early Paleozoic age.