

Monday, March 12, 2001
THE TAGISH LAKE CARBONACEOUS CHONDRITE
8:30 a.m. Room A

Chairs: M. M. Grady
L. A. Leshin

Gounelle M. Zolensky M. E. * Tonui E. Mikouchi T.

Mineralogy of Tagish Lake, a Unique Type 2 Carbonaceous Chondrite [#1616]

We have identified in Tagish Lake an abundant carbonate-poor lithology and a less common carbonate-rich lithology. Tagish Lake shows similarities and differences with CMs and CI1s. It is a unique carbonaceous chondrite recording specific aqueous alteration conditions.

Keller L. P. * Flynn G. J.

Matrix Mineralogy of the Tagish Lake Carbonaceous Chondrite: TEM and FTIR Studies [#1639]

TEM and FTIR studies of Tagish Lake matrix show that it is similar to CI chondrites, but dissimilar to CM.

Simon S. B. * Grossman L.

Petrography and Mineral Chemistry of the Chondrule, Inclusion and Olivine Populations in the Tagish Lake Carbonaceous Chondrite [#1240]

We subjected a small amount of Tagish Lake to freeze-thaw disaggregation to isolate the dense, high-temperature, fraction. Study of this population of objects is an important step in the comparison of Tagish Lake with other carbonaceous chondrites.

Nakamura T. * Noguchi T. Zolensky M. E. Takaoka N.

Noble Gas Isotopic Signatures and X-Ray and Electron Diffraction Characteristics of Tagish Lake Carbonaceous Chondrite [#1621]

Noble gas isotopic signatures and X-ray and electron diffraction characteristics of Tagish Lake indicate that it is a unique carbonaceous chondrite rich in saponite, Fe-Mg-Ca carbonate, primordial noble gases, and presolar grains.

Messenger S. *

Hydrogen Isotopic Measurements of the Tagish Lake Meteorite [#1916]

In an ion microprobe study of Tagish Lake matrix material we find commonly elevated D/H ratios, reaching 700‰ above SMOW. These values are higher than typical CI and CM chondrites, but lower than CR and LL3 chondrites and IDPs.

Grady M. M. * Franchi I. A. Verchovsky A. B. Wright I. P. Pillinger C. T.

Continued Investigation of the Light Element Geochemistry of Tagish Lake [#1733]

We have determined the abundance and isotopic composition of two separate carbonate generations within Tagish Lake. Nitrogen isotope analysis of the chondrite shows it to be organic-rich, with $\delta^{15}\text{N}$ values higher than in CI and CM chondrites.

Pizzarello S. *

Soluble Organics in the Tagish Lake Meteorite: A Preliminary Assessment [#1886]

A preliminary study of the soluble organics present in the Tagish Lake meteorite has been conducted. Water and solvent soluble compounds were identified.

Gilmour I. Pearson V. K. * Sephton M. A.

Analysis of Tagish Lake Macromolecular Organic Material [#1993]

Macromolecular material is, by far, the major organic component of meteorites. Flash pyrolysis GCMS has been used to investigate this organic component in Tagish Lake. It is more condensed, less substituted than Murchson.

Baker L. * Franchi I. A. Bland P. A. Wright I. P. Pillinger C. T.

Insight into the Evolution of the Tagish Lake Carbonaceous Chondrite by Analysis of the Oxygen Isotopic Composition of Extracted Water and Mössbauer Spectroscopy [#1703]

Analysis of oxygen isotopes in water from Tagish Lake together with Mössbauer spectroscopy suggest some similarities to the CI group of meteorites but also suggest differences in the extent of parent body hydrothermal alteration.

Clayton R. N. * Mayeda T. K.

Oxygen Isotopic Composition of the Tagish Lake Carbonaceous Chondrite [#1885]

We use oxygen isotopes to show the relationship of the Tagish Lake chondrite to the CM2 and CI1 groups. Tagish Lake underwent hydration at low temperature in a water-rich environment.

Engrand C. * Gounelle M. Duprat J. Zolensky M. E.

In-Situ Oxygen Isotopic Composition of Individual Minerals in Tagish Lake, a Unique Type 2 Carbonaceous Meteorite [#1568]

We measured the oxygen isotopic composition of individual minerals in Tagish Lake. The relationship with carbonaceous chondrites is confirmed. We found very ^{16}O enriched olivines. The carbonates will require a dedicated study of their C and O isotopes.

Leshin L. A. * Farquhar J. Guan Y. Pizzarello S. Jackson T. L. Thiemens M. H.

Oxygen Isotopic Anatomy of Tagish Lake: Relationship to Primary and Secondary Minerals in CI and CM Chondrites [#1843]

Ion probe analyses of olivine from Tagish Lake are similar to other C chondrites, but slightly more ^{16}O rich. Stepped extraction of carbonate shows $\Delta^{17}\text{O}$ values higher than CI or CM chondrites. Tagish Lake may be a new, unique C2 chondrite.

Lindstrom D. J. *

Calibration of Cosmic Ray-produced Nuclides in Meteorites by Normalization to 40K — Application to the Tagish Lake Meteorite [#2073]

Preliminary results for cosmic ray-induced nuclides in the Tagish Lake meteorite are obtained by estimating detection efficiency from 40K count rates and using published K content.