EVIDENCE OF ANOMALOUS $^{107}\text{Ag}$ AND $^{109}\text{Ag}$ COMPOSITION IN IRON METEORITES


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It has been reported that excessive $^{107}\text{Ag}$ in a wide range of iron meteorites is correlated with the Pd concentrations. Anomalous $^{107}\text{Ag}$ was attributed to the in-situ decay of $^{107}\text{Pd}$ still alive in the early solar system (Wasserburg 1985). We applied the in-situ AMS method to determine $^{107}\text{Ag}$ and $^{109}\text{Ag}$ compositions in several groups of iron meteorites and observed extreme variations of $^{107}\text{Ag}$ and $^{109}\text{Ag}$ count rates from those samples as a function of measurement sequence. In contrast, no significant variation in the counting rate of $^{108}\text{Pd}$ was observed. The origin of the inclusions responsible for these variations are not understood. However, in one interpretation, the observed results could be attributed to the preservation of pre-solar grains at sub-$\mu$m scales in iron meteorites. New AMS methods of measuring $^{107}\text{Ag}$ and $^{109}\text{Ag}$ simultaneously will be discussed.

REFERENCE


A SERVER-BASED CODE FOR IN-SITU-PRODUCED NUCLIDES THAT INCORPORATES IRREGULAR GEOMETRIES

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The application of in-situ-produced radionuclide dating of rock surfaces requires complex calculations and the incorporation of a few to as many as 100 pieces of data for each sample. Full neutron transport calculations, sometimes needed for $^{36}\text{Cl}$, can take from a few hours to a day or more on high-speed computers. Results need to be presented in terms of both exposure ages and erosion rates. To expedite this, a versatile computer code, radionuclide in-situ-produced cosmogenic-nuclide history (RICH), has been developed. This code is available to all scientists on the internet.

RICH is designed to accept data, with uncertainties, for any parameter that can affect production rate. Production rates are scaled for latitude, altitude, geometric shielding, depth, burial, snow cover, and rock composition. RICH will solve for the erosion rate, which (for now) is assumed constant. Complex, finite sampling surfaces are being modeled by incorporating Monte Carlo neutron, proton, and muon transport codes with an appropriate seed particle flux tuned to the site location. We have plans to account for geomagnetic variations, tectonic uplift, and multiple stepwise erosion.