COSMOGENIC EFFECTS ON ^{7}LI/^{6}LI, ^{10}B/^{11}B, AND ^{182}W/^{184}W IN CARBONACEOUS CHONDRITES

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Introduction: The discovery of boron and lithium isotope anomalies in calcium-aluminum-rich refractory inclusions (CAIs) from carbonaceous chondrites [1,2,3,4] have renewed the idea that some of the short-lived radionuclides alive in the early solar system have been produced within the forming solar system by irradiating some parts of the nebula and/or the accretion disk with energetic particles from the young sun. However, while some modelers claim to be able to reproduce the solar system initial ratios for most of the short-lived radionuclides (e.g., [5,6]) others argue that a simultaneous description of the short-lived radionuclides ^{10}Be, ^{26}Al, and ^{41}Ca is not possible in the frame-work of the local irradiation model [7]. Considering the relevance of this still open question, the finding of the possible presence of life ^{7}Be ($T_{1/2}$ = 53 days) in the early solar system is of special importance [1] and is usually considered as the smoking gun for the spallation model. However, Desch and Oullette [8] questioned this finding and argue, based on the dataset by Chaussidon et al. [1], that there is no indication for the existence of life ^{7}Be for three reasons. *First*, they argue that the fit used by [1] is of so poor quality that a linear correlation can be rejected. *Second*, they criticize that part of the correlation found by [1] is due to an overestimation of cosmic-ray induced effects on lithium isotopes, and *third*, that many points the original authors considered as being consistent with fractional crystallization (and can therefore be used for chronological studies) show evidence that they are actually isotopically disturbed. Here I discuss the first two points of criticism in some detail. In addition I present first results about the influence of thermal neutron capture reactions on the ^{182}Hf-^{182}W dating system in CAIs.

Modeling: The cosmogenic contributions on the ^{7}Be-^{6}Li, ^{10}Be-^{10}B, and ^{182}Hf-^{182}W systems have been modeled for carbonaceous chondrites with radii between 10 cm and 500 cm. The model predictions have been used to correct literature data (e.g., [1,9]). Combining the thus obtained data with state-of-the art fitting procedures, i.e., fully considering uncertainties, indicates that *i*) the conclusion by [1] is robust, i.e., there is a strong indication that ^{7}Be was alive in the early solar system, *ii*) that cosmic-ray induced effects on the ^{10}Be-^{10}B system are only very minor, and *iii*) that thermal neutron-induced effects can indeed compromise ^{182}Hf-^{182}W dating studies of CAIs.

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