Span Study of Cosmic ray exposure ages in Ordinary Chondrites

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Abstract

Meteorites have played a prominent role in direct access to study the various physicochemical processes occurred during early epoch of Solar system. Cosmic ray exposure (CRE) age is the duration in which meteoritic material has been exposed to high energetic cosmic radiation, while travelling as a meter size objects through interplanetary space, until their fall on Earth as meteorite.

We studied cosmic ray exposure history based on noble gases in several ordinary chondrites. The ordinary chondrites are subdivided on the basis of chemistry into three groups, the H (high iron), L (low iron), LL (very low iron) chondrites. [1]

We studied the CRE ages of the three sub-groups of the ordinary chondrites for understanding their origin from single parent body or multiple parent bodies. At present there is no constraint on how many parent bodies are required for ejection of ordinary chondrites? Are all ordinary chondrites come from single parent body or multiple parent bodies? The present work is to answer these questions and provide the constraints on number of parent asteroids. [2]

References

[1] M. Grady, G. Pratesi and V. Moggi Cecchi (2014) Atlas of Meteorites

[2] O. Eugster (1988) Cosmic-ray production rates for ^{3}He, ^{21}Ne, ^{38}Ar, ^{83}Kr, and ^{126}Xe in chondrites based on ^{81}Kr-kr exposure ages