Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)

PCG32-P02 Room:Convention Hall Time:May 20 18:15-19:30

$^{40}Ar/^{39}Ar$ method using cosmogenic ^{39}Ar

Hironobu Hyodo[1*], Yuko Takeshima[2], Tetsumaru Itaya[1]

[1]RINS, Okayama Univ. of Sci., [2]NEC Aerospace Systems, Ltd

Finding of ^{39}Ar of cosmogenic origin in meteorites was one of cues for developing $^{40}Ar/^{39}Ar$ method. If the production rate of ^{39}Ar is uniform, and if a long enough period elapses, the production and decay of ^{39}Ar reach to equilibrium since ^{39}Ar has a half life of 293 years. Eventually a rock or a mineral possesses a certain amount of ^{39}Ar depending on its potassium content. Using samples under the same exposure to cosmic ray, and determining an age of a sample, $^{40}Ar/^{39}Ar$ method can be applicable to the rest of unknowns. One of such possibilities may be to apply to samples on the lunar surface. No need for atmospheric contamination and ^{36}Ar measurement, and the application may be easier than that on the earth's surface. However, the method cannot be applied to samples in some depth or with different exposure histories.

Keywords: ^{39}Ar, cosmogenic, $^{40}Ar/^{39}Ar$ age, lunar surface, in situ measurement