

40Ar-39Ar dating of Proterozoic basaltic rocks in Singbhum area to the west of Kolkata, peninsular India

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In peninsular India, there are Proterozoic Lavas extending large area. The ages of these rocks are reported 1500-1600 Ma by K-Ar and Rb-Sr dating methods and we have reported the relation of these rocks to the Dwar Khola dolerite(1600-1800Ma 40Ar-39Ar ages) from Siwalik of Sub-Himalaya, situated about 400km north, before. We have collected these samples in 2003 and report 40Ar-39Ar age results in this paper.

These volcanic rocks are situated in the Proterozoic metamorphic and granitic rocks and divided 4 parts ((Dalma, Dhanjori and Jagarnathpur, Ongabila). Plateau ages about 1700-1800 Ma as those of Nepal dolerites cannot be obtained.

The Age Spectra of Dalma lava are 3 patterns such as 1) stair-type Age Spectra indicating 1800-2000Ma and 1300-1670Ma in higher temperature fractions and about 500-550Ma in lower temperature fractions 2) saddle shape patterns indicating excess Ar indicating 1800-2000Ma minimum ages in medium temperature fractions 3) disturbed plateau-like age spectrum indicating 1800-2000Ma. Ages of 1300-1670Ma might be metamorphic ages and ages of 500-550Ma indicate the age of Pan African Metamorphism.

The Age Spectra of Dhanjori lava are stair-type indicating 1600-1800Ma in higher temperature fractions and about 950-1000Ma in lower temperature fractions.

The Age Spectra of Jagarnathpur indicate excess Ar and 390-470Ma young ages are obtained in 900-1200C temperature fractions. It is difficult to consider these rock same as those of Dalma and Dhanjori.

The Age Spectrum of Ongabila is stair-type indicating about 1660Ma in higher temperature fractions and plateau like 1000-1080Ma ages in 900-1100C fractions. The age spectrum is similar to those of Dhanjori.

40Ar-39Ar age Spectrum of biotite in Singbhum granite shows excess Ar indicating 1700Ma (1000-1050C), which is younger than the original age of this granite.

From these results, we conclude 4 ages for these volcanic rocks.

1)1800-2000Ma; original age same as those of Nepal Dolerites.

2)1550-1670Ma; original age or metamorphic age

3)950-1050Ma; metamorphic age which is recognized in intruded rocks in Napier Complex, Antarctica.

4)450-550Ma; metamorphic age corresponding to the Pan African Metamorphism

In this paper, we will indicate detail results and some problems.