

# Rb-Sr whole rock age for Chail Series of northwestern Himalaya

V. B. BHANOT, SURESH K. KWATRA, ASHOK K. KANSAL AND B. K. PANDEY

## Abstract

Rb-Sr isochron age of  $1430 \pm 150$  m.y. has been obtained for the gneissic member of Chails exposed near Nirath and Baragaon of Northwestern Himalaya.

## Introduction

The present paper describes Rb-Sr isotopic measurements made for the gneissic member of the Chail Series. This work is in continuation of the recent work by Bhanot *et al* (1974, 1975), for the rocks and minerals from different rock-suites of Northwestern Himalaya.

Six whole rock samples were analysed. These had been collected from the gneissic rocks exposed at Nirath and near Baragaon on the new Kingal-Basantpur road (around  $31^{\circ}20'$  and  $77^{\circ}28'$ ), North of Simla in the Sutlej Valley, Himachal Pradesh. The gneissic rocks form a part of the Chails, which are exposed in the area under reference as allochthonous to para-autochthonous rock-suite adjoining the Rampur Window on the southwestern side (Bhargava *et al*, 1972 and Ashgirei, personal communication). These are over-riding the Shalis as a thrust-sheet, (Pande and Virdi, 1970). Some authors have classified these rocks as Salkhalas (Srikantia and Bhargava, 1974).

## Experimental Data

The experimental work was done by using the conventional Mass spectroscopic and isotopic-dilution techniques. The main instrument in use was a Nier-type Mass-spectrometer with  $90^{\circ}$ -deflection magnetic analyser of 27 cm-radius and fitted with an iron-source for solid samples, which was fabricated and provided to us at Chandigarh by the Bhabha Atomic Research Centre, Bombay. The decay constant for Rb has been taken as  $1.42 \times 10^{-11}$ /year, which is the new value recently recommended for adoption by the International Sub-Commission on Geochronology. Other constants which have been used are  $Rb^{85}/Rb^{87} = 2.591$  and  $Sr^{88}/Sr^{86} = 8.375$ . The results of analysis for the six whole rock samples are given in Table I.

TABLE I

Sample Number	Rb, ppm	Common Sr ppm	$Sr^{87}/Sr^{86}$	$Rb^{87}/Sr^{86}$ atomic
125	329.8	69.6	1.011	13.18
126	375.7	75.0	1.040	13.98
171	277.5	201.3	0.825	3.85
174	338.7	61.6	1.070	15.35
175	439.1	60.7	1.150	20.19
176	283.2	156.2	0.844	5.06

The data has been plotted in figure 1. The least-squares-fitting of the isochron gives an age of 1430 m.y. with an initial value of  $\text{Sr}^{87}/\text{Sr}^{86} = 0.746$ . After taking into consideration the statistical as well as the non-statistical errors, the age is assigned an error of 150 m.y. The somewhat high value of  $\text{Sr}^{87}/\text{Sr}^{86}$  (initial) indicates that the gneissic part of the Chails, under study, was possibly formed from still older rock-material. The above-mentioned experimental data fixes a lower limit for the age of the Jutoghs, which are considered to be older than the Chails. Work is in progress for determining directly the radiometric age of rocks of the Jutogh Series.

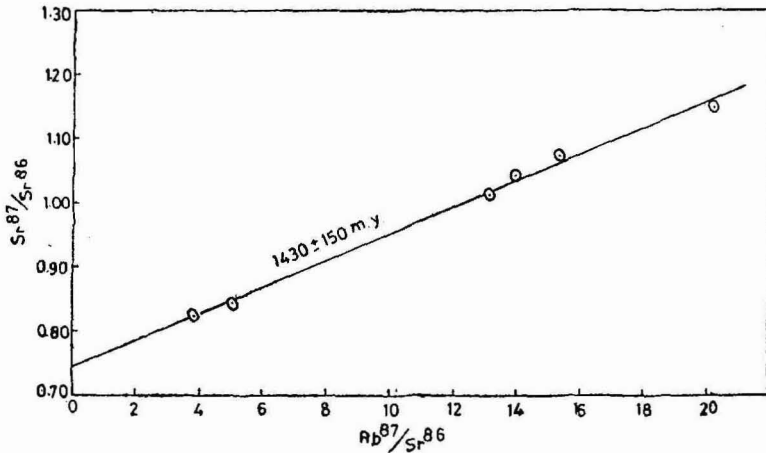


Figure 1.

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#### Address of the authors

V. B. BHANOT, SURESH K. KWATRA, ASHOK K. KANSAL and B. K. PANDEY, Physics Department, Panjab University, Chandigarh.