

## SHORT COMMUNICATION

## A NOTE ON THE ISOTOPIC AGE OF BERYL PEGMATITES NEAR RAMA, SURINAME

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The "pegmatite zone" in northeastern Suriname is characterized by pegmatites containing minerals such as beryl, columbite-tantalite, cassiterite and lithium minerals. It is an approximately 20 km wide zone running W-E from the Kwakoe Gron area on the Saramacca River to the Jorka Creek area on the Marowijne River, and continuing into French Guiana. The mineralized pegmatites are thought to be genetically related to two-mica granite, a type of granite assigned to the youngest generation of the Trans-Amazonian suite of granitoid rocks. This stage of the Trans-Amazonian events of acidic magmatism is mainly characterized by biotite granite, and the two-mica granites are interpreted as products of assimilation of country rock by biotite-granitic magma (see, e.g., van Eijk, 1961; Doeve, 1966; Bosma and de Roever, 1975; Dahlberg, 1976).

A Rb-Sr reconnaissance isochron investigation of whole-rock samples from the Trans-Amazonian granitoid-volcanic basement all over Suriname has established an age of  $1920 \pm 40$  Ma for this episode of magmatism ( $^{87}\text{Rb}$  decay constant  $1.39 \times 10^{-11} \text{ a}^{-1}$ ), but time intervals up to some tens of millions of years might be possible between the different

phases of Trans-Amazonian acidic plutonism and volcanism (Priem *et al.*, 1971; Priem, 1973). However, so far no isotopic age measurements were available for the mineralized pegmatites in northeastern Suriname. Although a genetic relationship with the Trans-Amazonian two-mica granite is generally accepted, it is rather difficult to provide conclusive evidence for this relationship in a deeply weathered terrain largely covered with amazonian rain forest.

This note presents the results of Rb-Sr and K-Ar measurements on different splits of a muscovite sample from one of the beryl-bearing pegmatites near the former plantation Rama on the Suriname River. The pegmatite is composed of quartz, kaolinized feldspar, tourmaline, booklets of large muscovite flakes, and beryl. Between 1953 and 1955 the beryl has been mined and the sample (71 Sur 225, a muscovite-quartz rock) was collected in the old quarry, using explosives to obtain samples as fresh as possible; nevertheless, the collected material shows some effects of weathering.

The analytical data and calculated ages are listed in the table below.

| Rb*<br>(ppm Wt) | Sr*<br>(ppm Wt) | <sup>87</sup> Sr/ <sup>86</sup> Sr** | Rb-Sr age***<br>(Ma) | K <sup>+</sup><br>(% Wt) | rad. <sup>40</sup> Ar <sup>++</sup><br>(ppm Wt) | atm. <sup>40</sup> Ar<br>(% total <sup>40</sup> Ar) | K-Ar age <sup>+++</sup><br>(Ma) |
|-----------------|-----------------|--------------------------------------|----------------------|--------------------------|---|---|---------------------------------|
| 770             | 80.8            | 1.554                                | }1985±60             | 8.73                     | 1.907   | 1.7   | }1876±60                        |
| 778             | 74.0            | 1.648                                |                      | 8.73                     | 2.004   | 3.0   |                                 |
|                 |                 |                                      |                      |                          | 1.946   | 2.3   |                                 |

\* Isotope dilution analysis.

\*\* Calculated from the isotope dilution analyses. The isotope measurements were made on a 20 cm, 60° mass-spectrometer with digital output, utilizing thermal ionization and multiplier detection.

\*\*\* Two points "isochron" of the two splits of muscovite, using the  $^{87}\text{Rb}$  decay constant of  $1.39 \times 10^{-11} \text{ a}^{-1}$ . Initial  $^{87}\text{Sr}/^{86}\text{Sr} = 0.718$ .

+ Flame photometric analyses with lithium internal standard and CsAl buffer.

++ Standard isotope dilution techniques (using  $^{38}\text{Ar}$  as tracer) in a Reynolds-type glass mass-spectrometer; the measurements were made by the static method.

+++ Using the constants:  $\lambda_e = 5.85 \times 10^{-11} \text{ a}^{-1}$ ;  $\lambda_\beta = 4.72 \times 10^{-10} \text{ a}^{-1}$ ; abundance  $^{40}\text{K} = 0.0118 \text{ atom \% total K}$ .

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When the limits of error are taken into account, both muscovite ages are in accordance with the age of  $1920 \pm 40$  Ma established for the Trans-Amazonian granitoid-volcanic basement in Suriname. It is thus evident that the mineralized pegmatites of the "pegmatite zone" in northeastern Suriname belong indeed to the Trans-Amazonian suite of granitoid rocks. The K-Ar age appears to be somewhat lower than the Rb-Sr age, although the difference still lies within the limits of error. A rather high ratio is calculated for the initial  $^{87}\text{Sr}/^{86}\text{Sr}$ , but this is a not uncommon phenomenon in mineralized pegmatites.

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