Data in Brief 19 (2018) 1537–1544

Contents lists available at ScienceDirect

Data in Brief

journal homepage: www.elsevier.com/locate/dib

Data Article

Data on recovery rates and external morphologies of zircon grains from mechanical and electrical pulverization of rock samples

Mami Takehara [a,*], Kenji Horie [a,b], Tomokazu Hokada [a,b], Shoichi Kiyokawa [c]

[a] National Institute of Polar Research, 10-3, Midori-cho, Tachikawa-shi, Tokyo 190-8518, Japan
[b] Department of Polar Sciences, The Graduate University for Advanced Studies (SOKENDAI), 10-3, Midori-cho, Tachikawa-shi, Tokyo 190-8518, Japan
[c] Department of Earth and Planetary Sciences, Kyushu University, 744 Motooka, Nishi-ku, Fukuoka, 819-0395 Japan

ARTICLE INFO

Article history:
Received 26 February 2018
Received in revised form
11 May 2018
Accepted 12 June 2018
Available online 18 June 2018

ABSTRACT

In this data article, we provide information on the recovery rate and scanning electron microscope (SEM) images of the external morphology of zircon grains separated from two rock samples (AS3 and TEMORA 2) using both mechanical and electrical pulverization systems. The data in this article are related to the research article entitled "New insight into disturbance of U-Pb and trace-element systems in hydrothermally altered zircon via SHRIMP analyses of zircon from the Duluth Gabbro" (Takehara et al., 2018) [1]. Zircons from these two rock samples are widely used as reference materials for U–Pb dating by micro-beam techniques. Rock samples with nearly equal weights were pulverized by both methods, and the recovered zircon grains were then concentrated using conventional mineral-separation methods. Weights of the products at each step in the mineral separation process were measured, and finally the recovery rates of the heavy and non-magnetic minerals, including zircon, were calculated.

DOI of original article: https://doi.org/10.1016/j.chemgeo.2018.01.028
* Corresponding author.
E-mail address: takehara.mami@nipr.ac.jp (M. Takehara).

https://doi.org/10.1016/j.dib.2018.06.016

Specifications Table

Subject area	*Earth and Planetary Sciences*
More specific subject area	*Mineralogy*
Type of data	*Tables and Figures*
How data was acquired	*High voltage pulse power equipment (SELFRAG Lab), Scanning electron microscope (SEM; JEOL JSM-5900LV), Field emission-scanning electron microprobe (FE-SEM; JEOL JSM-7100F) and Electronic balance (ASP413)*
Data format	*Raw and calculated*
Experimental factors	*The rock samples were cut into a suitable size and shape for each pulverization method by using a rock cutter. They were then cleaned in an ultrasonic bath and dried in an 80 °C oven.*
Experimental features	Rock samples (TEMORA 2 and AS3), with nearly equal weights, were pulverized by two methods: mechanical pulverization (using a stamp mill) and electrical pulverization (SELFRAG Lab). Each crushed rock sample was separated by conventional mineral separation methods, and recovery rates were calculated based on the weights of the products of mineral separation. External morphologies of zircon grains collected from each crushed and separated rock sample were observed by SEM.
Data source location	*TEMORA2: Middledale Gabbroic Diorite in the Lachlan Fold Belt of southeastern Australia* *AS3: Anorthosite Series (AS3) in the Duluth complex, Minnesota, U.S.A.*
Data accessibility	*Data are within this article.*
Related research article	*M. Takehara, K. Horie, T. Hokada, S. Kiyokawa, New insight into disturbance of UPb and trace-element systems in hydrothermally altered zircon via SHRIMP analyses of zircon from the Duluth Gabbro, Chem. Geol. 484 (2018) 168–178.* [1]

Value of the Data

- This data article provides important information about the impact of pulverization methods on zircon recovery rates in a rock sample, since enhancement of the zircon recovery rates is important for accurate micro-beam analysis, especially if polychromic zircon populations are to be quantitatively compared.
- This data article indicates that the recovery rate of the reference zircons for U–Pb geochronology using micro-beam techniques, by electrical and mechanical pulverization methods, which is an essential information for practical mineral separation of zircon for U–Pb geochronology using micro-beam techniques
- This data article shows the external morphologies of zircon grains separated by each pulverization method, and provides information about how the pulverization of rock samples break or preserve the external morphologies of zircon grains.

1. Data

1.1. Recovery rate of zircon grains

Recovery rates were estimated from the products at each step in the mineral separation of the rock samples. In this article, we focus on two pulverization methods for rock samples in the mineral separation process: mechanical (stamp mill) and electrical (SELFRAG Lab) pulverization. The SELFRAG Lab system is a commercial lab-sized machine developed by SELFRAG AG that pulverizes materials