

## U-Pb ages and Hf isotopic compositions of provisional zircon standards LKZ-1 and BRZ-1

YOUN-JOONG JEONG<sup>1\*</sup>, TAE-HO LEE<sup>1</sup>, SOOK JU KIM<sup>1</sup>,  
KEEWOOK YI<sup>1</sup> AND CHANG-SIK CHEONG<sup>1</sup>

<sup>1</sup>Geochronology Group, Korea Basic Science Institute,  
Chungbuk 363-883, Republic of Korea  
(\*hero0123@kbsi.re.kr)

The combination of in situ U-Pb age and O-Hf isotopic and trace element composition of zircon provides invaluable information on crust and mantle evolution. The geochemical and isotopic data of zircon measured by mass spectrometry need external calibration or test for precision and accuracy using standard reference material. Here we report U-Pb ages and Hf isotopic compositions of provisional zircon standards LKZ-1 and BRZ-1, which were provided by gem dealers from Sri Lanka and Brazil, respectively, and analyzed at Korea Basic Science Institute.

LKZ-1 is a transparent pale yellow crystal with dark cathodoluminescence (CL) emission. BRZ-1 is a opaque dark brown crystal showing a symmetric CL banding. The weighted mean of <sup>207</sup>Pb-corrected <sup>206</sup>Pb/<sup>238</sup>U ages, measured by SHRIMP IIeMC, was 586.0±4.4 Ma (n=12, MSWD=1.3) for LKZ-1 and 573.0±5.8 Ma (n=11, MSWD=1.6) for BRZ-1.

The Lu-Yb-Hf isotope data were collected on a Nu Plasma II MC-ICPMS coupled to a 193 nm ArF excimer laser ablation system, employing static spots of ca. 50 μm diameter, a repetition rate of 10~13 Hz, and a fluence of 8~10 J/cm<sup>2</sup>. In order to monitor the time profile of the measured ratio, a time resolved analytical procedure was applied, and signal intensities for each cycle were collected every 0.2s integration time. Data reduction was achieved using Iolite v.2.5 software, and included correction for baseline, instrumental drift, mass bias, isobaric interference by <sup>176</sup>Lu and <sup>176</sup>Yb, and down-hole fractionation. The Lu-Yb-Hf isotopic compositions of four available standard zircons (91500, Plešovice, TEMORA1, FC-1) agreed well with those reported in the literature. Average measured <sup>176</sup>Hf/<sup>177</sup>Hf ratios of LKZ-1 and BRZ-1 were 0.281794 ± 0.000032 (n=45, 2σ SD, the same below) and 0.281960 ± 0.000054 (n=45), respectively. Their <sup>176</sup>Yb/<sup>177</sup>Hf (0.00358 ± 0.00069 for LKZ-1, 0.039 ± 0.052 for BRZ-1) and <sup>176</sup>Lu/<sup>177</sup>Hf ratios (0.000104 ± 0.000003 for LKZ-1, 0.0013 ± 0.0017 for BRZ-1) were positively correlated with each other.

The homogeneity of LKZ-1 and BRZ-1 in U-Pb age and Hf isotopic composition will be further checked for another fragment of the crystals. Their oxygen isotopic and trace element compositions will also be analyzed.