Accurate Determination of Iron Isotopic Compositions of Geological Reference Materials by High Resolution MC-ICP-MS

P. LIANG, H. L. YUAN*, K. Y. CHEN, Z. A. BAO, M. N. DAI, C. L. ZONG, W. T. YUAN, C. CHENG, L. CHEN, X. LIU

¹ State Key Laboratory Continental Dynamics,Department of Geology,Northwest University, Xi'an, 710069, China (*Corresponding author.email:sklcd@nwu.edu.cn)

We use AGMP-1M anion exchange resin to purify Fe in geological samples after high temperature PTFE bomb dissolving. The Fe isotope compositions were measured by Nu 1700 multicollector inductively coupled plasma mass spectrometry (MC-ICP-MS) at high resolution mode (Resolution = 14000RP). The interference peaks over Fe isotopes can be separated completely. The calibration method using in this work is samplestandard bracketing technique (SSB). The total procedure blank is < 7ng. The experiments show that the difference of Fe concentration between samples and standard has no effect on Fe isotopic compositions as long as the $C_{sample}/C_{standard}$ is between 0.3-3. However, the difference of acidity between samples and standard affects the Fe isotopic compositions seriously when the difference is larger than 10%. The measured Fe isotopic compositions of BCR-2, BHVO-2, AGV-2, GSR-2 and GSR-3 agreed well with reported values within 2SD. The external precisions of both $\delta^{56}Fe$ and $\delta^{57}Fe$ are better than 0.03‰ (2SD) for BCR-2, BHVO-2, AGV-2 and GSR-3. The precision of δ^{56} Fe and δ^{57} Fe for GSR-2 are 0.05% and 0.07%, respectively. This could be caused by its low contents (Fe = $3.47 \ \mu g/g$).