

Procedure for separating Fe from geological matrices to carry out isotopic analyses

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We propose a simple procedure for separating and purifying Fe (and other metals) from geological matrices without the use of ionic exchange chromatography. This technique, in fact, may yield isotopic fractionation of the sample [1; 2].

The sample is dissolved with HNO₃ 1.5 N to obtain a solution of pH between 2.5 and 3. Then, let H₂S bubble through the solution for about 1 hour, thus metal sulfides can precipitate completely under stationary conditions. After the solution is filtered and sulfides are rinsed, they are dissolved with HCl 6N. The different metals can be precipitated selectively by adding NH₄OH and adjusting properly the pH. Lastly, the precipitates are filtered, rinsed and treated for carrying out TMS analysis.

To test effectiveness of the described procedure, the J-M iron standard was repeatedly analyzed. The isotopic results are shown in table 1. It is evident that the analytical data obtained are of good quality, being particularly comparable with those carried out by [1].

Table 1-Iron isotope compositions of J-M Fe standard

	technique	⁵⁴ Fe/ ⁵⁶ Fe	Error ‰	^δ 56Fe‰	Error‰
	*				
J-M	3 intersection	15.695 ±0.004		-0.25	±0.25
J-M **	2 intersection	15.705 ±0.004		0.38	±0.25
J-M ***		15.699 ±0.005		0.00	±0.32
J-M ****	12 double spike	15.704 ±0.005			

* number of analysed samples ;

** standard chemically treated;

*** ponderal mean;

**** Johnson e Beard (1999)

References

[1] Johnson C.M., Beard B.L. (1999). Intern. J. Mass Spect. **193**, 87-99

[2] Schoenberg R., von Blanckenburg F. (2005). Intern. J. Mass Spect., 2-3 (**242**), 257-272.