

## Fractionation of Sulfur isotope analysis by ICP-MS/MS

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Sulfur isotope ratio is used as an important indicator in geochemical and biochemical studies [1]. The ratio to the two major stable isotopes  $^{34}\text{S}/^{32}\text{S}$  varies significantly, ranging from -50‰ to +40‰, in nature by redox reaction [2]. The isotope ratio analysis has been mostly done by gas phase isotope ratio mass spectrometer (IRMS). We applied a new apparatus ICP-MS/MS for the analysis as the faster and simpler technique.

ICP-MS/MS is a tandem MS ICP-MS featuring high capability to resolve spectra interference using reaction cell technologies. With the strict control of ions entering the cell by the first MS, the reaction cell can efficiently remove the interference. For sulfur analysis, oxygen ( $\text{O}_2$ ) gas was introduced to cell to convert sulfur ion ( $\text{S}^+$ ) to  $\text{SO}^+$  to remove original interference on the S isotope mass. It allows to measure sulfur at 100ppt level on  $^{32}\text{S}$  and  $^{34}\text{S}$  as shown in Fig 1.

The technique was optimized and applied for S IR analysis using IAEA-S1 as IR calibration standard. The achieved accuracy and precision will be reported.

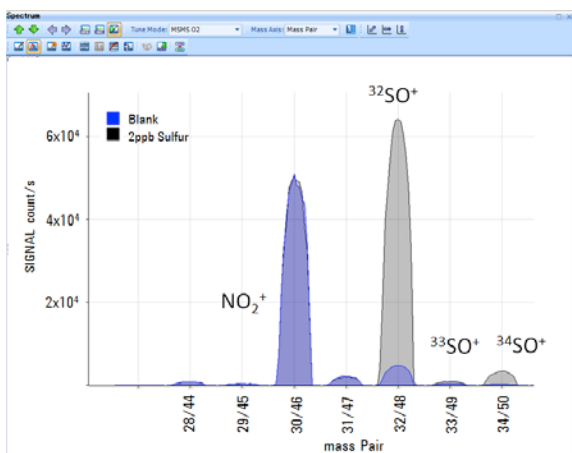


Figure 1 Spectrum of blank and 2ppb S solution

[1] J Ryu, RA Zierenberg, RA Dahlgren et al (2006), Chemical Geology 229 : 257-272 [2] H.G. Thode (1970) , Mineral. Soc. Amer. Spec. Pap. 3 : 133-144