



An improvement in sensitivity in isotope ratio mass spectrometers

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An improvement in sensitivity in isotope ratio mass spectrometers is desirable for many reasons – it allows smaller samples to be measured, it improves precision, and where incremental sampling is being carried out it increases the temporal resolution. Furthermore, measurements made in dual inlet mode may be carried out over a smaller range of source pressures and so the overall linearity of the system is improved.

Following an analysis of the ion optics of the Sercon Nier-type source, we have made modifications which improve the efficiency of the source and the subsequent improvements in instrument sensitivity are significant. Here we discuss the factors which affect IRMS sensitivity, the modifications which have been made and the implications for IRMS applications in both continuous flow and dual inlet mode.