Curious case of ^{26}Al accelerator mass spectrometry

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Accelerator mass spectrometry measurement of ^{26}Al suffers from low negative ionisation yield that often becomes the limiting factor. To counter the low Al^- yield it has been recognised that AlO^- produces negative ions much more efficiently and is a potential avenue to improve the measurement precision. When using AlO^- for the measurement there is an additional challenge to separate the interfering isobar ^{26}Mg and ^{26}Al, but this can be achieved effectively with gas-filled magnet.

However, this seemingly neat solution of using AlO^- instead Al^- for the measurement does not necessarily yield as clear cut improvements in precision as one would hope. To illustrate this point, data from conventional measurement method at ANSTO is presented and benchmarked against published data using AlO^- method.