Electronic Supplementary Material (ESI) for Journal of Analytical Atomic Spectrometry

Electronic supplementary information for "Solution-cathode glow discharge – optical emission spectrometry using a compact spectrograph" by Todd A. Doroski, Allison M. King, Michael P. Fritz, and Michael R. Webb

The ionic-to-atomic emission ratio was determined using the ratio of the emission at those wavelengths after background subtraction. The accuracy of this measurement is limited by the differences in efficiencies of the spectrometer and detector at these two wavelengths. The differences were assumed to be small enough to be neglected for this rough measurement. Based on the peak wavelengths, the 280.3 nm ionic emission was 2.4% of the 285.2 nm atomic emission. Based on the peak wavelengths plus one pixel to either side, it was 2.6%.

The Mg II 279.6 line should be twice as large as the Mg II 280.3 nm line. The ratio of the 279.6 nm ionic line to the 285.2 nm ionic line should therefore be exactly twice the ratio calculated above. The 280.3 nm line as found to be 4.2% of the 285.2 nm line based on the peak wavelengths and 3.6% when the two adjacent pixels were included. Using the 279.6 line as a proxy for the 280.3 nm line therefore gives 2.1% based on the peaks and 1.8% based on the three most intense pixels for each line.

Neglecting the previously mentioned potential differences in instrumental efficiencies, all of these measurements are consistent with a Mg II 280.3 nm : Mg I 285.2 nm emission ratio of about 0.02.

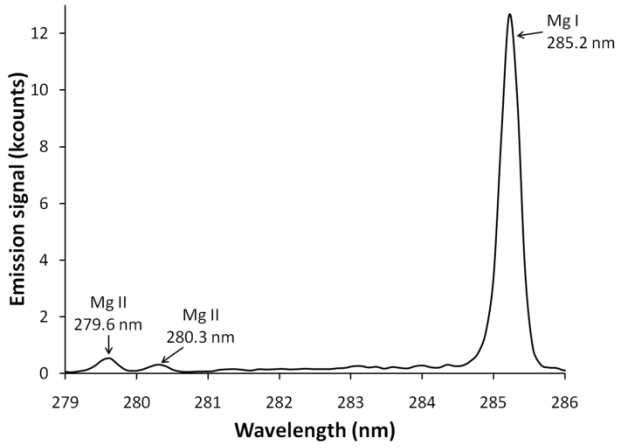

Fig. S-1 Background-corrected emission from 1 ppm Mg between 279 and 286 nm