10) How small (or large) can my $d^{18}O$ sample be while still giving a reliable result?

Unlike the elemental analyzer (EA), the high temperature conversion elemental analyzer (TC/EA) does not measure and dynamically adjust the size of a sample before introducing to the mass spectrometer. This means that the peak area (measured in volt seconds - Vs) will always follow a single linear relationship with the quantity of oxygen in the sample. As is true for all isotope measurements, having too little, or too much material can be a problem in some cases. However, over a wide range of sample sizes this effect is negligible. The plot below shows the difference between measured and known (or previously well measured) samples as a function of sample size. We typically aim for samples to be approximately 100 Vs. Samples that yield a peak area below approximately 30-40 Vs should be treated with caution and if possible reanalyzed using more material. Note that these relationships can vary slightly over time and are often inconsistent near the lower limits (some samples at the smallest range of acceptability can yield accurate numbers, while others will not).

