

Activity ①

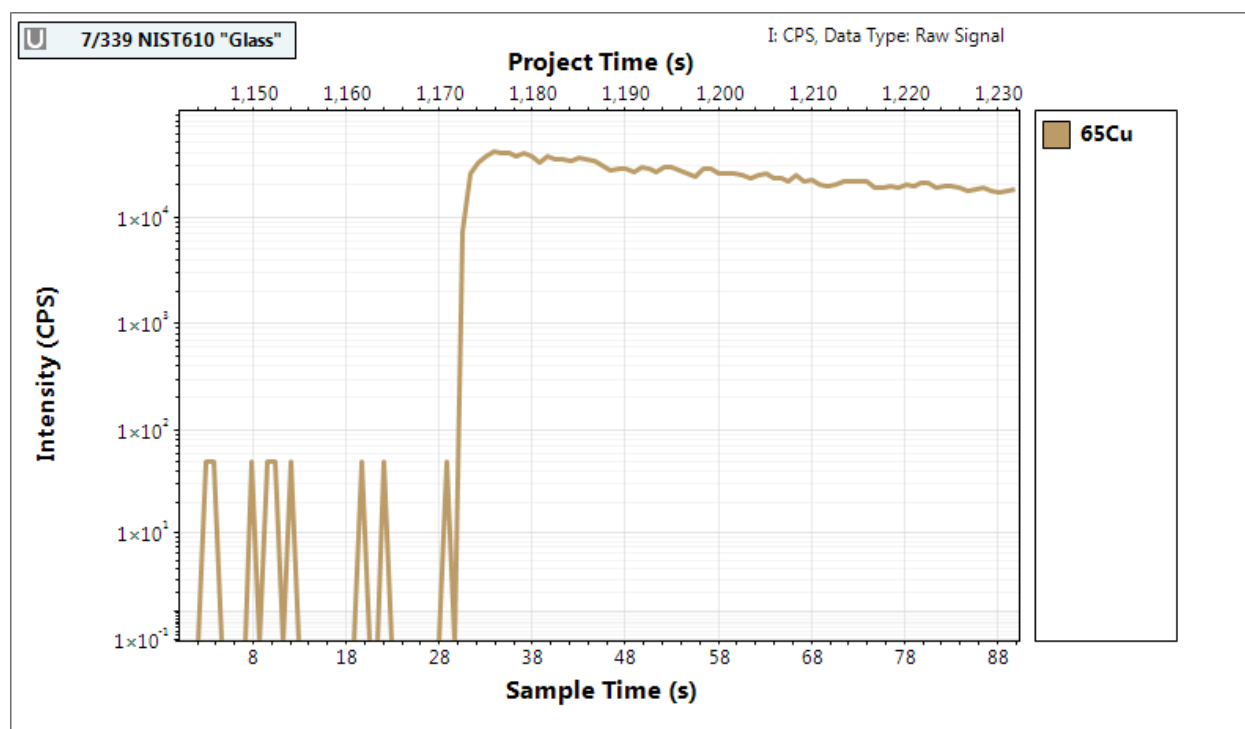
Name: _____

LA-ICP-MS Data Reduction Short Course

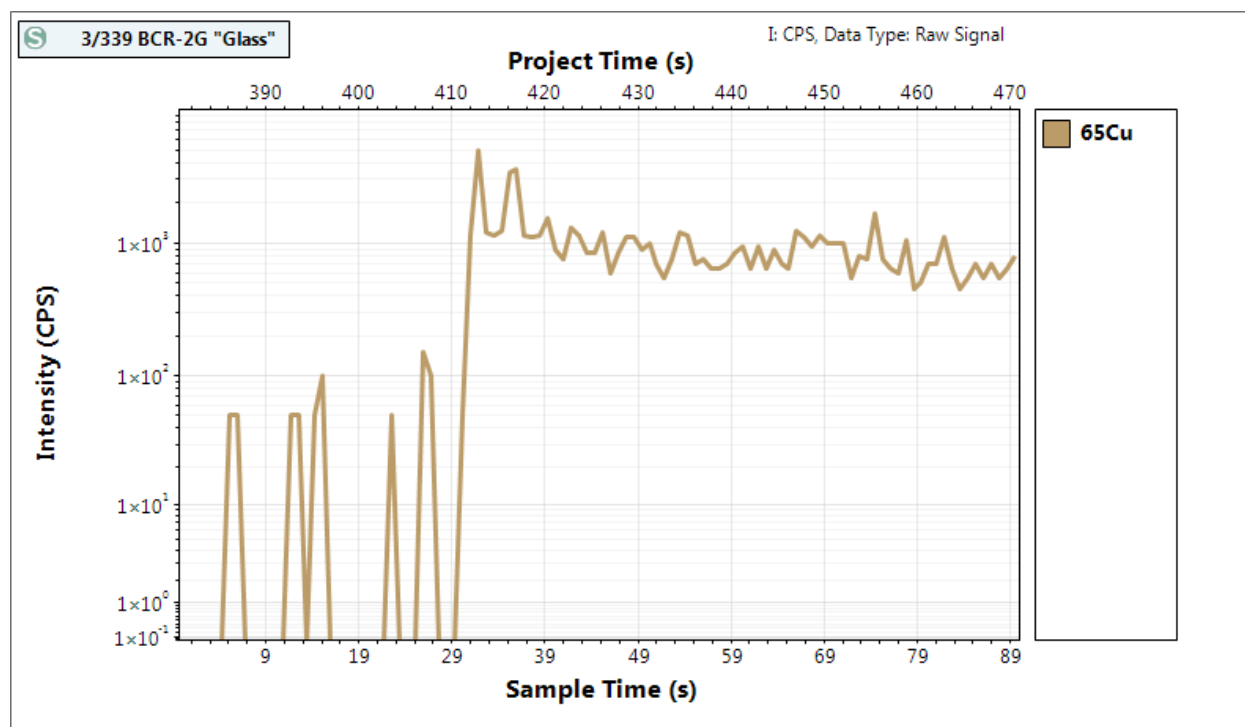
Single Point External Calibration

The charts show signals of ^{65}Cu from a reference material and an unknown.

Reference Material – NIST610 Glass



Unknown – Basaltic Glass



1) Use the scale on the charts to estimate the intensity of the gas blank and ablated signal.

	Reference Material	Unknown
Gas Blank Intensity (CPS)		
Ablation Intensity (CPS)		
Net Signal Intensity (CPS)		

2) Use the known concentration from the reference material to calculate the calibration factor.

Known Concentration: $441 \mu\text{g.g}^{-1}$

Calibration Factor: $F = \frac{C_{STD}}{I_{STD}} =$

3) Use the calibration factor to calculate the concentration of Cu in the unknown.

Concentration: $C_{UNK} = F \times I_{UNK}$

True Concentration: $18 \mu\text{g.g}^{-1}$

Notes

How close is your concentration to the true concentration?

While the signal is measured using an isotope of copper, note that the isotopic abundance is not used at all to calculate the total concentration of copper in the unknown.

In this example the signal on the reference material is 3–4 orders of magnitude greater than the gas blank and so the gas blank could be ignored.

The signal on the unknown is quite noisy and this would contribute to greater uncertainty in the result, but more on that later!