

Supplementary Material to:

A Multi-Component Calibration Approach to the Microabsorption Problem Involving Inorganic Mixtures

Liangfeng Guo,* Martin Tjahjono, Martin Schreyer and Marc Garland

*Institute of Chemical and Engineering Sciences, 1 Pesek Road, Singapore 627833,
Singapore. E-mail: guo_liangfeng@ices.a-star.edu.sg*

1. XRF Results on all Six Ternary Inorganic Mixtures

X-ray fluorescence spectra were collected on a wavelength dispersive X-ray fluorescence spectrometer, Explorer S4 (Bruker AXS, Karlsruhe, Germany) equipped with a rhodium source. A small amount of sample was manually ground with about twice its volume of boric acid. This mixture was then placed on top of a boric acid cake which was pressed into a pellet of 40 mm diameter by applying a force of 200 kN. XRF spectra were collected using a mask of 34 mm diameter and elemental analysis was performed using a standardless approach. Table S1 and Figure S1 show the comparison between the weighed in compositions and the compositions calculated by the XRF data evaluation software. (Note: XRF measurements using other preparation techniques, i.e. fused beads can be considered in order to obtain more accurate XRF results).

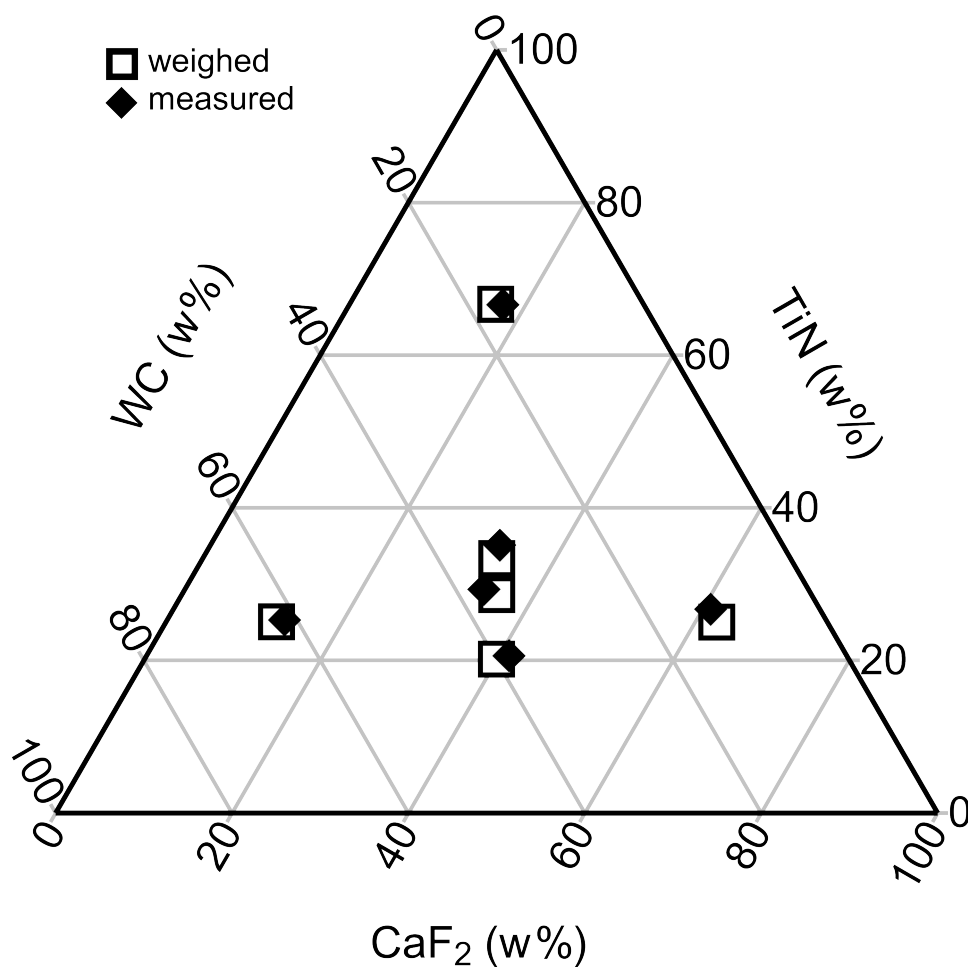


Figure S1: Illustration of the comparison of the weighed in and the calculated weight percentages obtained from XRF measurements.

Table S1: Comparison of the weighed in and the calculated weight percentages obtained from XRF measurements.

No.	Weighed in			XRF*		
	CaF ₂ (w%)	TiN (w%)	WC (w%)	CaF ₂ (w%)	TiN (w%)	WC (w%)
1	33.36	33.32	33.32	32.8	35.1	32.0
2	62.45	25.01	12.54	60.9	26.7	12.5
3	16.56	66.66	16.78	17.4	66.6	16.0
4	35.71	28.61	35.68	33.9	29.3	36.8
5	12.52	25.04	62.43	13.3	25.3	61.4
6	39.90	20.16	39.94	41.1	20.6	38.3

* Uncertainties of XRF weight fractions are estimated of circa 1.2w%