**Typical general procedure writeup for publications when using the Purdue University Panalytical Epsilon4 X-ray Fluorescence Spectrometer (Omnian Procedure)**

Energy dispersive X-ray fluorescence (EDXRF) data were collected using a Malvern Panalytical Epsilon4 X-ray fluorescence spectrometer equipped with a 15 W silver anode X-ray tube, a ten sample changer, and helium gas flush option, and an energy dispersive silicon drift detector.

Samples were packed as powders into XRF cups of appropriate sizes using either 4 μm polypropylene (“prolene”) or 3.6 μm mylar foil. Prior to data collection, a recalibration standard based on elements Al, Ca, Fe, K, Mg, Na, P, S and Si (“Omnian Monitor”) was measured for drift correction in the soft X-ray region. Data were collected using the Epsilon software1) employing the “Omnian” data collection procedure. Data were collected with six different acceleration voltages between 5 and 50 kV and varying thickness Ti, Al, Cu and Ag filters. Currents were set automatically so that the detector dead time does to not exceed 50% (to avoid excessively large escape and sum peaks), or to the maximum tube power of 15W. Data were analyzed using the standardless Omnian procedure, with data processing parameters being defined prior to analysis for each type of sample using the Epsilon Dashboard software.2) After automatic quantification, spectra were visually inspected for miss-assigned peaks and elements were removed or added as required before final reanalysis. Data are reported in weight % or weight ppm.

1) Epsilon Software, Version 2.1(8.55), 3/18/2019, Malvern Panalytical B.V., Almelo, The Netherlands, 2019.

2) Epsilon Dashboard, Version 2.1.1.10717, 3/18/2019, Malvern Panalytical B.V., Almelo, The Netherlands, 2019.