

Supplementary Information

Exploration of LIBS as a novel and rapid elemental mapping technique of nuclear fuels in the form of surrogate TRISO particles

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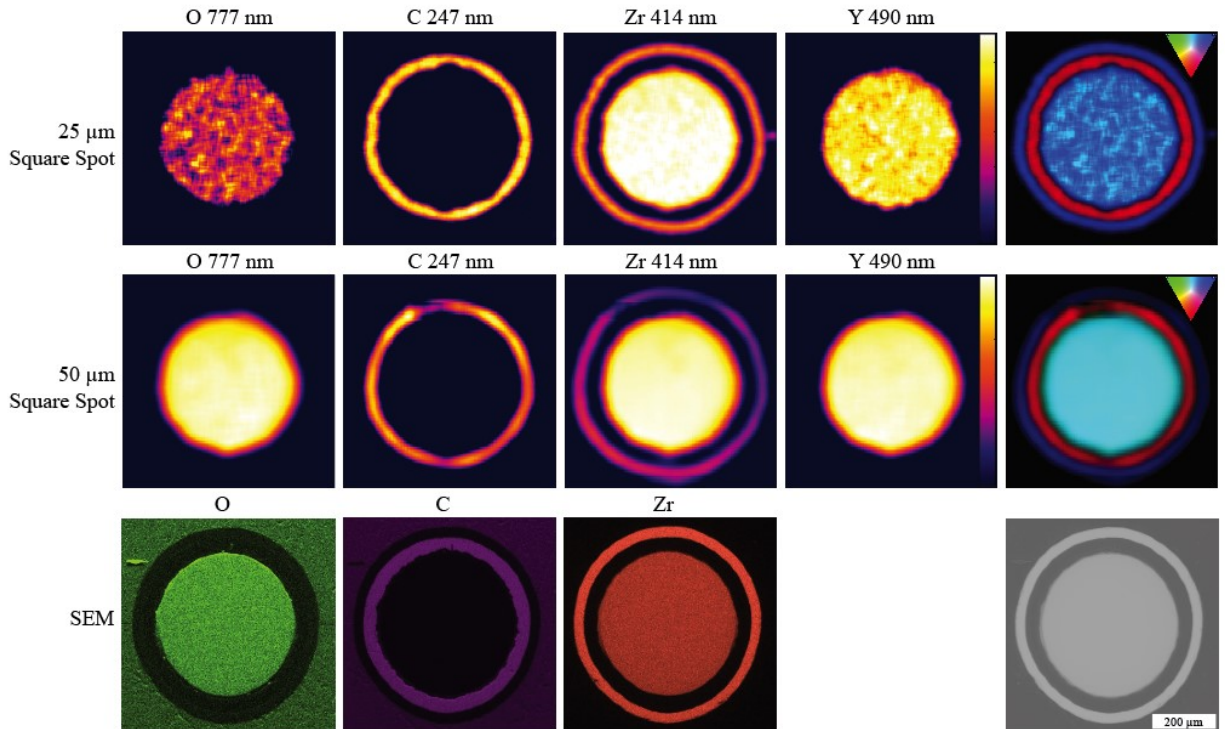


Figure S1. LIBS mapping of a single surrogate TRISO particle using a 25 and 50 μm square spot and its respective elemental distribution along with a complimentary SEM-EDS map of the same particle. The right most maps are shown in an RGB scale defined as green: O 777nm, blue: Zr 414 nm, and red: C 247 nm.

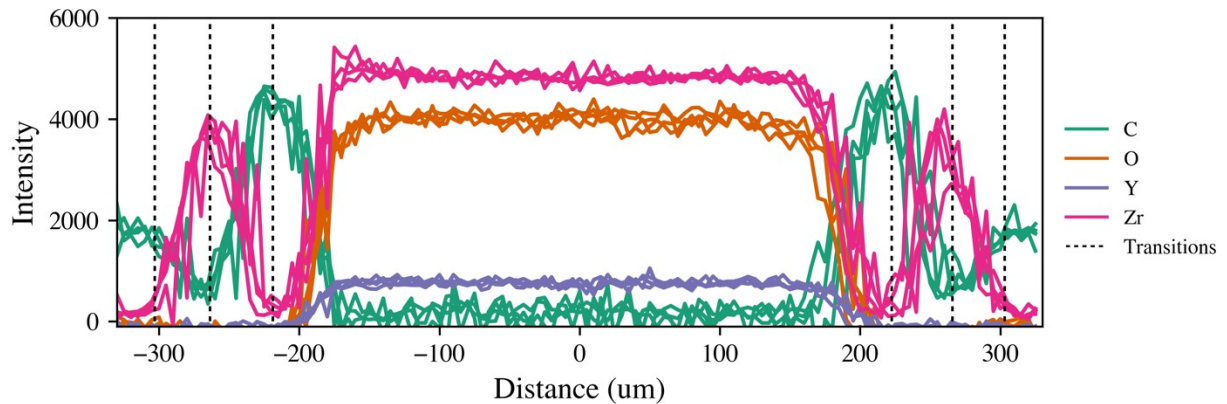


Figure S2. Example of four cross-sectional slices taken from the elemental maps shown in Figure 5; the orientation of these slices along a surrogate TRISO particle is illustrated in the Figure 6 legend. The layer transitions from the SEM-EDS line scan are projected onto the LIBS plots to better understand features of the LIBS profiles.

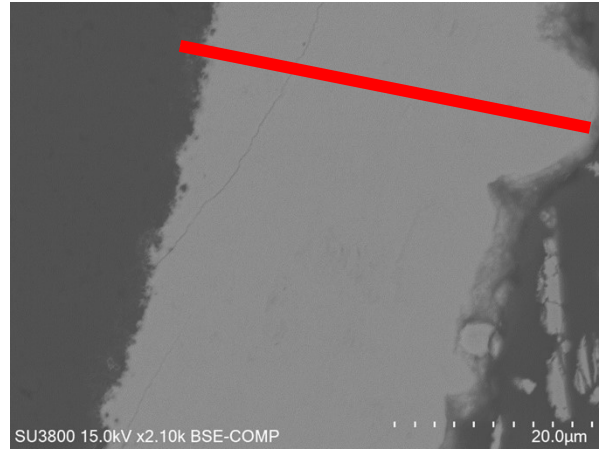


Figure S3. SEM map of the outer layer of a surrogate TRISO particle to highlight an impurity within the production such that a bulge is seen. This could be contributing to the high %RSD in the determination of the layer thickness