



Supplementary Information: XRF mapping

Compilation of semi-quantitative X-Ray Fluorescence maps of Ca, Sr, Fe, Mn and Si of **(A)** the entire polished cross section through the shell of *T. sanchezi* shown in **Figure 1** and **(B)** a small part of the shell showing exceptionally well-expressed laminations. Note that concentrations of Ca and Sr are high in well-preserved parts of the shell with low concentrations of Mn, Fe and Si. Silicification and carbonate recrystallization causes concentrations of Mn, Fe and Si to be higher in parts of the shell affected by diagenesis. Color legends for all elemental maps are shown between the larger **(A)** and more detailed **(B)** maps.