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A community best practice for Lu/Hf data reporting for *in-situ* ICP-MS/MS

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The emergence of laser ablation ICP-MS/MS and its application for *in-situ* beta-decay and electron-gain geochronology within the last decade has enabled a rapid expansion in the popularity and application of previously laborious geochronology systems across the globe. Isotopic systems such as Lu/Hf, Rb/Sr and Re/Os are now routinely used in a growing number of laboratories to date *in-situ* a broad suite of minerals such as garnet, apatite, micas, feldspar and calcite, among others, at sub-100 μm spatial resolution. As the application of these systems continues to evolve and proliferate, it remains vital that the community maintains a shared understanding of data practices and reporting to allow results and procedures to remain comparable and reproducible across laboratories and research groups. Furthermore, the relatively recent advent of these methods by ICP-MS/MS, and the small—but rapidly expanding—number of laboratories conducting such work, provides an almost unique opportunity for the community to develop and coalesce around a shared set of reporting conventions and requirements, rather than the more fragmented landscape often seen in more mature communities.

In partnership with the National Collaborative Research Infrastructure Strategy (NCRIS) and the AuScope enabled EarthBank project, a working group of global researchers and specialists in *in-situ* beta geochronology has established best practice reporting templates and minimum metadata requirements for *in-situ* Lu/Hf geochronology data. Consistent templates allow structured reporting of not only the reduced Lu/Hf data and interpreted ages, but also the instrumental settings used in laser ablation and tandem mass spectrometry, and approach to data reduction and calibration. This detailed framework captures a record across the analytical workflow for samples and reference materials, which we propose as a best-practice standard for the wider community. Data formatted to this template can additionally be freely uploaded and stored in the EarthBank platform, which may act as a community database to support FAIR and Open Science data availability for Lu/Hf data. Furthermore, this standard has been designed to be easily extendable to other comparable systems such as Rb/Sr and Re/Os, opening the path for a consistent best-practice reporting framework across all such *in-situ* dating systems.