

traceDs: An experimental trace element partitioning database

ROGER L NIELSEN¹ AND MARK S GHIORSO²

¹CEOAS, Oregon State University, Corvallis, OR,
USA. nielsenr@geo.oregonstate.edu

²OFM Research, Seattle, WA, USA, ghiorso@ofm-
research.org

Our goal in developing traceDs is to provide an accessible resource of experimental partitioning data. Historically, experimental trace element partitioning studies have focused on the development of model constraints for understanding of trace element evolution. We have now reached the point where new studies require a significant effort to compile and evaluate the existing data. This situation is complicated by the fact that the range of approaches to data collection, reduction and reporting differ dramatically from one system to another and one investigator to another, providing serious challenges to the creation of a coherent database – and suggesting the need for a standard format for data presentation and reporting. In addition, the field is moving towards an approach that involves development of numerical expressions that describe the behavior of trace elements over a wide range of composition. Such an approach requires that everyone have ready access to all of the existing experimental data.

Our new effort includes all the published analytical results from experimental determinations. The threshold criteria include experimental conditions, major element and trace element analyses of the phases. Data sources that did not report these minimum components were not included.

The data are stored using a schema derived from that of the Library of Experimental Phase Relations (LEPR), modified to account for additional metadata, and restructured to permit multiple analytical entries for various element/technique/standard combinations.

Our ultimate goal is to produce a database and flexible user interface useful for experimentalists to set up their work and to build calibration datasets, find appropriate partition coefficients, and to help reviewers evaluate models submitted for publication. As an additional benefit, we hope that this investigation will help to set new publication standards for experimental data. An example of where standards need to be improved is the publication of each analysis – not just the averages. Otherwise it is essentially impossible for users to evaluate the degree to which the analysis includes more than one phase.

The database will be assessable at the portal lepr.ofm-research.org.