

R Shiny web app for the presentation of PGE data of geological reference materials

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Highly siderophile element data (mass fractions and isotope ratios) are important tracers for planetary processes. Core formation and mantle/crust differentiation led to very low abundances of the HSE in particular the platinum group elements (PGE) in most geochemical samples. Measurements procedures for the determination of HSE mass fractions and radiogenic and mass dependent and independent stable isotope ratios are challenging and thus still developed and refined. For method validation purposes, well characterised matrix matched reference materials (RM) are required.

In order to help to validate measurement procedures for PGE mass fraction and ¹⁸⁷Os/¹⁸⁸Os determinations, a large set of published and unpublished measurement results was collected in a database. The results are associated with parameters such as measurement principle (e.g. TIMS, ICP-MS), sample preparation (acid digestion, fire assay etc.), analyte/matrix separation (e.g. ion exchange), digestion temperature and duration, test portion size (sample mass) etc. making it possible to draw conclusions about the optimum measurement procedure and to estimate a consensus value and associated uncertainty.

A standalone interactive web app build with SHINY “R” CRAN package allows users to create plots with mass fractions and/or isotope ratios. The app is hosted by the International Association of Geoanalysts (IAG) and is accessible through the following link: https://geoanalyst.shinyapps.io/PGE_lit/. The current version allows the selection of PGE data of 53 RM (sediments, mafic and ultramafic rocks). Boxplots of mass fractions versus data source (laboratory) sorted by increasing lab median are available for the time being. Further developments will allow the calculation of modes, medians and mean and the presentation of best robust estimate of the true value associated with uncertainties.

