

## 2012 Microanalytical Reference Materials



A conference entitled Microanalytical Reference Materials, organised by the US Geological Survey, was held in Golden, Colorado, USA, 15-17 May 2012. In collaboration with the Microanalysis Society, the IAG supported the participation of internationally renowned keynote speakers and encouraged the submission of conference papers to *Geostandards and Geoanalytical Research*. Topics addressed during the conference included the synthesis of microanalytical reference materials (RMs), REE RMs, Ti in quartz and Ti in zircon RMs, atom probe standardization, and recent round-robin results.

Held during the semester break on the campus of the Colorado School of Mines, this conference attracted 65 registrants from as far afield as Australia. Organised in large part by members of the US Geological Survey's Denver office, this gathering focused on the analytical challenges specific to the characterisation of materials at nanogram and smaller sampling scales. Key themes included the quantification of sample heterogeneity, the synthesis of both amorphous and crystalline materials for development into microanalytical reference materials ( $\mu$ -RMs), the origin of matrix-dependent ion yields in laser ablation ICP-MS analyses, and new strategies for minimising the total uncertainty budgets in electron probe analyses. A highlight of the conference was a presentation by the USGS Denver office on the results of a major and trace element interlaboratory comparison study using a newly synthesized basaltic material. Though based on a relatively small data set from less than two dozen laboratories, the results revealed a frighteningly wide scatter in the data. In fact, for some elements reported at the nanogram or picogram scales, the difference between the maximum and minimum reported quantities exceeded a factor of ten, clearly indicating analytical challenges well beyond the realm of calibration issues. The three-day meeting closed with a series of presentations devoted to recent advances in atom probe tomography as applied to geological materials.

For me, the overarching conclusion to be drawn from my participation in this symposium is that much more attention needs to be focused on metrology issues before one will truly have confidence in results reported at nanogram or picogram levels.

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*Attendees at the Microanalytical Reference Materials topical conference held in Golden, Colorado, USA. This event was sponsored by the Microanalytical Society, with support from the IAG and other organisations.*