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The AuScope Geochemistry Network: Facilitating Better Organisation, Coordination and Ability to Share Data Produced by Australian Geochemistry Laboratories

Bryant Ware[1], Alexander Prent[1], Samual Boone[2], Hayden Dalton[2], Guillaume Florin[3], Yoann Greau[3], Fabian Kohlmann[4], Moritz Theile[4], Wayne Noble[4], Erin Matchan[2], Barry Kohn[2], Andrew Gleadow[2], and Brent McInnes[1]

[1]John de Laeter Centre, Curtin University, Bentley, Western Australia 6102, Australia (bryant.ware@curtin.edu.au)
[2]School of Earth Sciences, University of Melbourne, Melbourne, Victoria 3010, Australia
[3]School of Natural Sciences, Macquarie University, NSW 2109, Australia
[4]Lithodat Pty Ltd, Melbourne, Victoria 3030, Australia

One of the greatest challenges in the global geochemistry community is to aggregate and make the large amounts of geochemical data generated by laboratories FAIR [Findable, Accessible, Interoperable, and Reusable] and publicly available the large amounts of data generated in laboratories. Standardisation and data organisation has often been an individual or voluntary/uncoordinated effort and/or motivated by the likelihood of immediate/near-future publication. Along with the technical challenges of getting laboratory data into a well-structured relational database and linked to samples' metadata, societal and cultural issues are often present around the standardisation and accessibility of data reporting (e.g. equipment manufacturer, funding body proprietary data outputs, data reduction software accessibility and requirements/"data ownership" of the users/scientists).

In response to a national expression of a need to address the challenges outlined above and for better organisation and coordination of Australian geochemistry laboratories and data, AuScope funded the AuScope Geochemistry Network (AGN) in 2019. The AGN comprises a team of researchers, data-scientists, and technical staff from three universities across Australia; Curtin University, the University of Melbourne, and Macquarie University, tasked in coordinating and strategizing the best approach to:

- Unite the diverse Australian geochemistry community.
- Promote national capability (existing geochemical capability).
- Promote investment in infrastructure (new, advanced geochemical infrastructure).
- Support increased end user access to laboratory facilities.
- Support professional development via online tools, training courses and workshops.
- Preserving legacy data sets

Over the last two years the AGN has worked to organise the geochemistry community and provide solutions to the integration and adoption of international best practices for data management. With the 'end in mind' the AGN and collaborator Lithodat have developed the AusGeochem platform, a unique research data platform that services laboratory needs, bridges the gap between sample metadata and analytical data as well as strengthens the user-laboratory connection. To establish data reporting tables that fit the community's need, yet facilitate FAIR data practices and integrating international best practices for handling geochemistry data, the AGN led and coordinated Expert Advisory Groups composed of geochemical specialists from a number of Australian institutions. Along with the AusGeochem platform that allows laboratories to upload, archive, disseminate and publish their datasets; the AGN has built LabFinder, a web application tool that helps geoscience users find and access the right laboratory and analytical technique to solve their research questions. LabFinder aims to continue to support end user access to laboratory facilities leading to the improvement in the capability and capacity of geochemistry laboratories on a national scale. In the coming two years AGN will continue to build upon these accomplishments by expanding the AGN data partnerships through the on boarding of institutions hosting major geochemistry laboratories, further facilitating collaborations between Australian geochemistry laboratories.