

Report- Young Scientist Mobility Scholarship

Yinggang Zhang, Freie Universität Berlin / Germany, 19.07.-16.08.2019

With the enlightenment of Simon Hohl, I am interested in the bio-geochemical metal cycling in Earth's first habitable environments. As the Cadmium isotope proxy is a promising new tool to study paleo-productivity variations in microbialites, we applied combined trace metal abundance, and C and Cd isotopic composition analyses in several biogenic stromatolites from the Pongola Supergroup deposited about 3 Ga ago. The Pongola Supergroup has been extensively studied by researchers from the SPP (i.e. [Alexander et al., 2007](#); [Eickmann et al., 2018](#)) and samples have been taken by Sebastian Viehmann. However, the lack of a precise measurement method for Cd isotope composition at my home-university limited my study so far. For this reason, and to be able to work in an international workgroup for the first time, I applied to visit Elis Hoffmann and Harry Becker at the geochemistry group at the Freie Universität Berlin (FU). Their geochemistry lab has developed a Cd separation method with the help of Simon Hohl, needed for this study. Thanks to a Young Scientist Mobility Scholarship, I could visit Harry and Elis in their department in July and August 2019 and learn the Cd separation and measurement method systematically. During this visit, with Simon's help, I digested my stromatolite samples, conducted Cd column separations and ICPMS and TIMS measurements. Carbonate leachates of the studied stromatolites revealed seawater-like REY patterns. Further, variations in bio-essential trace metals and Cd isotope compositions argue for variable nutrient uptake in the Archean oceans, a finding that we aim to publish in future.

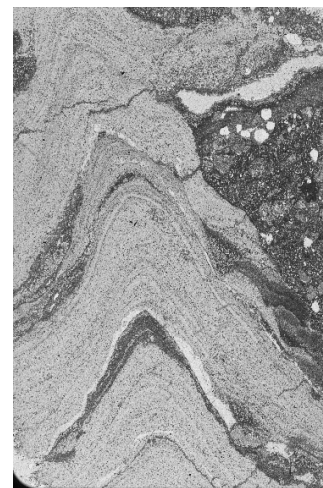
I liked the visit at Freie Universität Berlin very much, not only because it was my first academic experience abroad but also because I learned a lot from the geochemistry group of FU and their perfect research atmosphere and professional laboratory environment. Elis and Simon also gave me several presentation training, which helped me a lot for my first English presentation at the following Goldschmidt Conference. Also, during the visit to the FU geochemistry group and in the cosmopolis Berlin, I found the happiness being a geological researcher abroad. Moreover, of course, my English also improved to some extent. Thanks again for giving me this opportunity.



Yinggang Zhang in the lab of Harry Becker, FU Berlin



Pongola specimen pictures (samples from S. Viehmann)



Pongola stromatolite microphotograph (picture by S. Viehmann)