

Joint winner of the 2021 IAG Young Scientist Award

Tao Luo



Tao is an associate professor at China University of Geosciences, Wuhan after receiving his PhD degree. The focus of his research has been the investigation of elemental and isotopic fractionation during LA-ICP-MS analysis and development of novel non-matrix-matched methods for U-Th-Pb dating of accessory minerals.

Tao started to work in geoanalytical research during his master's degree and was responsible for running their LA-ICP-MS lab as a student-assistant at that time. He investigated ICP-

induced fractionation behaviours in LA-ICP-MS and evaluated the influence of argon and helium carrier gases on signal intensities and elemental fractionation in analysis by both ns- and fs-LA-ICP-MS. In addition, Tao has developed a novel, water vapor-assisted method³ for non-matrix-matched determination of U-Th-Pb ages in accessory minerals. This method greatly broadens the wide applications of *in situ* U-Th-Pb geochronology to diverse accessory minerals without the strict requirement of matrix-matched reference materials⁴. He applied this water vapor-assisted method for the development of *in situ* LA-ICP-MS wolframite U-Pb dating for the first time, which solves a very challenging question of the timing and duration of hydrothermal W mineralisation.

Currently, he is working on the development of new reference materials for microbeam analysis of U-Pb geochronology and Hf-O isotopes. When not working in the lab, Tao enjoys hiking and cycling.

³Tao Luo, He Zhao, Qiuli Li, Yang Li, Wen Zhang, Jingliang Guo, Yongsheng Liu, Junfeng Zhang and Zhaochu Hu (2020). Non-matrix-matched analysis of Th-Pb ages in zircon, monazite and xenotime by laser ablation inductively coupled plasma mass spectrometry, *Geostandards and Geoanalytical Research*, 2020, <https://doi.org/10.1111/ggr.12356>.

⁴Tao Luo, Zhaochu Hu, Wen Zhang, Yongsheng Liu, Keqing Zong, Lian Zhou, Junfeng Zhang, Shenghong Hu (2018). Water vapor-assisted “universal” non-matrix-matched analytical method for the *in situ* U-Pb dating of zircon, monazite, titanite and xenotime by LA-ICP-MS. *Analytical Chemistry*, 90 (15), 9016–9024.