

# Winner of the 2023 IAG Young Scientist Award

## Jing-Yao Xu



When Jing-Yao Xu received her award she was a postdoctoral researcher at the Institute of Geology and Geophysics Chinese Academy of Sciences (Beijing), having received her PhD degree at the University of Barcelona. The main focus of her research was the development of new reference materials and analytical methods for the microanalysis of stable isotopes of composition-variable minerals by secondary ion mass spectrometry (SIMS), and their application to trace mantle composition and magma evolution. She developed new dolomite reference materials for SIMS oxygen isotope analysis and a novel accurate and rapid on-line matrix effect calibration method for dolomite O-isotope analysis. The new on-line method takes SIMS  $^{18}\text{O}$ - $^{16}\text{O}$ - $^{56}\text{Fe}$  $^{16}\text{O}$ - $^{24}\text{Mg}$  $^{16}\text{O}$  measurements concurrently without additional Fe#

values obtained by electron probe microanalysis, and is more accurate and effective than the traditional off-line calibration method. Moreover, the newly developed method<sup>1</sup> has the potential to be applied to other stable isotopes of composition-variable materials. She used this SIMS method to determine the composition of a range of olivines from kimberlites worldwide, and her study<sup>2</sup> sheds light on the modification of mantle-derived magmas by interaction with the lithospheric mantle. When Jing-Yao is not working, she enjoys reading and travelling.

1. Xu, J.-Y., Li, Q.-L., Tang, G.-Q., Lu, K., Liu, Y., Feng, L.-J., and Melgarejo, J.C., (2022), *Accurate and efficient SIMS oxygen isotope analysis of composition-variable minerals: online matrix effect calibration for dolomite: Analytical Chemistry*, 94, 7944–7951.
2. Xu, J.-Y., Giuliani, A., Li, Q.-L., Lu, K., Melgarejo, J.C. and Griffin, W.L. (2021) *Light oxygen isotopes in mantle-derived magmas reflect assimilation of sub-continental lithospheric mantle material. Nature Communications*, 12, 6295.