Paper Number: 4663

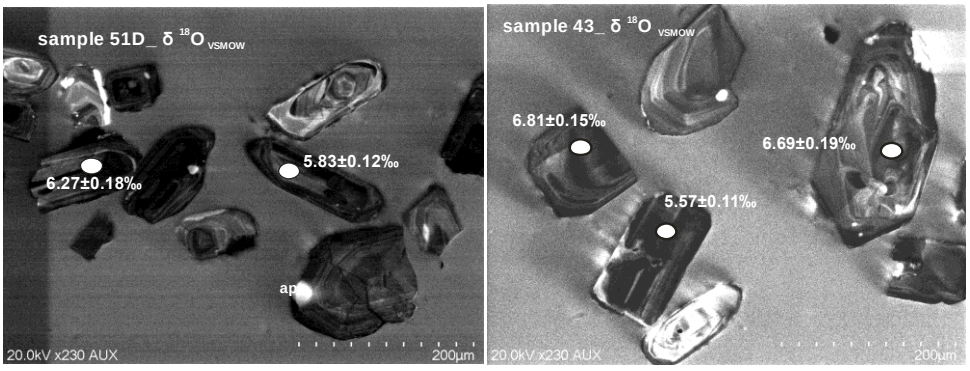
# The oxygen isotope study of zircon grains from Catanda extrusive carbonatite (Angola).

Wolkowicz, S.[1], Krzeminska, E.[1], Wołkowicz K. [1], Jackowicz, E.[1]

[1] Polish Geological Instituite – NRI, 00-975 Warszawa, Rakowiecka 4, krystyna.wolkowicz@pgi.gov.pl

The Catanda Massif of 80 km$^2$ area is one of a few dozen alkaline massifs situated in the Uku Seles region (Kwanza Sul Province), mid-western Angola. The Catanda carbonatite massif forms the Lucapa graben, that is the Mocamedes Arch structure, cutting the Congo-Kasai Craton from NE to SW and is related to the break-up of Gondwana during the Cretaceous. Previous age determinations suggest that the timing of igneous activity in the area was between 138-109 and 92 My.

Current research has shown that the Catanda carbonatite complex is dominated in volume by pyroclastic rocks, represented by tuffs that are pyroclastic fall, flow and surge deposits. The composition of juvenile pyroclasts is analogous to lavas, but the tuffs are much more contaminated by crustal rocks. Carbonatite lavas are formed in the most part by welding or agglutination of spatter, the particles of which are distinguished by positive relief on the surface of layers. The authors have identified two main types of lavas [1], corresponding to calcio- and silicocarbonatites, while the other researchers, using more specific criteria, have identified 3 or 4 types [2, 3]. A new investigation of oxygen isotope on accessory zircons was performed to recognise possible melt sources e.g. mantle versus crust and hydrothermal interactions and fluid alteration. Zircon measurements were conducted on the SHRIMP IIe/MC instrument at the Polish Geological Institute, Warsaw, using Cs+ primary ion beam focused to 20-23µm spot. The O isotopic compositions were determined for mostly euhedral zircons with igneous zonation, as revealed by CL imaging.




*References:*

[1] Wolkowicz et al. (2014) In: Abstracts Book 30th Int. Conf. on Ore Potential of Alkaline Rocks.: 82-84

[2] Campeny et al. (2014) Bull. of Volcanology 76:818-833

[3] Campeny et al. (2015) Lithos 232:1-1