

EMPA-FT applied in detrital zircons

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Based on the studies made by Gombosi [1], we present an alternative method of dating zircons using an electron probe microanalysis (EMPA) to measure uranium concentration [U]. The EMPA-FT technique avoids the hazards of thermal neutron irradiation and allows simultaneous chemical compositions to be determined. However, the EMPA-FT method overcomes challenges associated with the LA-ICP-MS technique: i) Non-destructive technique; ii) smaller spot ($5\mu\text{m}$) than LA-ICP-MS ($20 - 50\mu\text{m}$). and iii) greater accuracy in tracking of actinides (i.e., U, Th). Therefore, in many geologic applications EMPA-FT may be an advantageous technique due to its low cost, fast turnaround time, and the avoidance of neutron irradiation. After applied this methodology, with success, in samples of rapidly cooled zircons, the next step was verify the applicability of the electron microprobe analyzer fission track (EMPA-FT) in detrital zircons belonging to Bauru Basin, São Paulo state, Brazil. The results obtained shown agreement between the methodologies (see figure below): traditional Fission-Track and EMPA-FT. The uncertainty of the age of is affected mainly by components that N_{238} (^{238}U quantity), Q_s (spontaneous fission-track density) and, in the EMPA-TF case, Z factor.

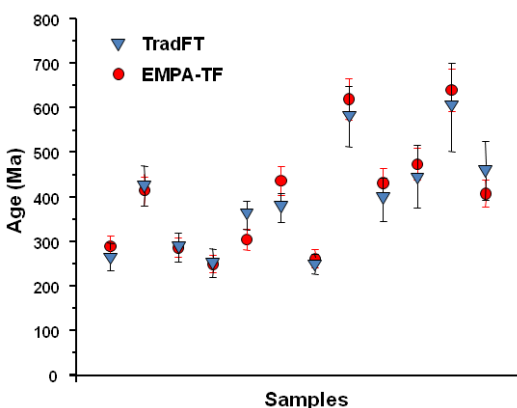


Figure 1. Comparison among ages by TradFT and EMPA-FT

[1] Gombosi D. *et al* (2014) *Chemical Geology* **363**, 312–321