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The youngest and the oldest terrestrial errorchron for the Isua Greenstone Belt, West Greenland; found in the meta-conglomerate

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We present geochronological evidence regarding the latest metamorphic event and the old age for the Isua Greenstone Belt (IGB) in southwest Greenland. We had a chance to collect conglomerate samples from the identical outcrop with Fedo's (2000). We have analyzed a meta-conglomerate whose origin remains controversial, but for whom the isotopic age determination has yet to be attempted. For the isotopic analysis in the present work, sliced samples were taken from a big specimen ($\geq$10kg), and quartz nodules were picked out. The remainder were crushed and processed by mineral separation procedures.

The Rb-Sr internal regression line obtained in the present study defines an errorchron of 1467 $\pm$ 20 Ma (MSWD=3.2), which is the youngest age for the IGB, and reflects a mid-Proterozoic thermal event. Pb isotope analysis, on the other hand, resulted in an errorchron of 3.97 $\pm$ 0.15 Ga, which is comparable to the early Archean Akilia association ($>$3850 Ma) in west Greenland. Although the protoliths of the clasts of the meta-conglomerate are inferred to be derived from a stratigraphy adjacent to the IGB, the present result seems to require derivation from an even older source, since an age older than 3.81 Ga has yet to be reported. In addition, Pb isotopic compositions of garnets define an errorchron with an age of 2782 $\pm$ 10 Ma(MSWD = 7.1) which is concordant with the age previously reported for the metamorphosed pelagic shales from IGB (Rosing and Frei, 2004).

References

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