

Re-Os age for pyrite grains with MIF signal in the Huronian Supergroup, Canada

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Paleoproterozoic is known as a period of successive glaciations and rise of oxygen in the atmosphere. The Huronian Supergroup, Ontario, in Canada is the most continuous record during this period. We have analyzed mass independent fractionation (MIF) of sulfur isotopes of pyrite grains throughout the Huronian Supergroup, which would suggest the timing of the rise of oxygen. We have found so far evidence of MIF for samples from conglomerate of Livingstone Creek Formation which is the lowest part of the Huronian Supergroup. Although the samples with MIF signals are from conglomerate, it is important to know the formation age of the pyrites which should have formed under the low oxygen level (lower than 10^{-5} PAL). We have therefore conducted Re-Os dating for the pyrite samples (grain sizes are ca 10 micro meter). Our preliminary results show the Re-Os age of 3117 ± 70 Ma (Initial $187\text{Os}/188\text{Os} = -2.7 \pm 1.1$, $n=3$, MSWD = 2.6), suggesting that the samples with MIF signal found in Livingstone Creek Formation were derived from old sediments deposited in the Archean when the atmospheric oxygen level was quite low. We plan to conduct Re-Os dating for other samples from the Huronian Supergroup in order to establish the timescale of successive glaciations and to identify the horizon of global glaciation (snowball Earth event) suggested from the Transvaal Supergroup in South Africa.