Re-Os age of pyrite conglomerates from Livingstone Creek Formation in the Huronian Supergroup, Ontario, Canada

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We have tried to determine the Re-Os age of pyrites from Livingstone Creek Formation, the lowermost part of the Huronian Supergroup, Ontario, Canada. The Huronian Supergroup, Paleoproterozoic strata, deposited between 2.45Ga and 2.22Ga. As the rise of atmospheric oxygen and three glaciations (including a snowball earth event) may have occurred during 230 million years of this period, Paleoproterozoic is one of the periods in the Earth history which attract interests of many scientists. There is, however, no information on radiometric (absolute) age throughout the Huronian Supergroup because the most part of the Huronian Supergroup is comprised of clastics. We therefore tried to date pyrites commonly existing in sedimentary rocks by using Re-Os dating method, based on the beta-decay of 187Re with a decay constant of 1.666 X 10-11. Detailed examination of the results suggests that we should not use data of the measurements with the low ion beam intensities of Re and/or Os. We have obtained with the data with high ion beam intensities an isochron age of 3074 +/- 220Ma. The obtained age suggests that the pyrites were formed in the middle Archean and redeposited as fragments 500-600 million years after their formation. Although concentrations of Re and Os of these samples were very low, we succeeded in dating of these samples. It therefore implies that the Re-Os dating methods could be useful for dating sedimentary rocks formed in Archean and Proterozoic.