

U-Pb zircon dating of Creaverville Formation, Pilbara, Australia

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The Cleaverville Group of the coastal Pilbara terrane, Western Australia, is one of the most complete sections of a submarine sequence. The Creaverville group is composed of five formations, i.e. the Lagoon, Lagoon Pillow Basalt, Dixon Island, Dixon Pillow Basalt and Snapper Beach (Cleaverville) formations. The age of rhyolite tuff in the middle of Dixon Island Formation is 3195 Ma. On the basis of the presence of cyclic, bimodal volcanic sedimentary sequence and the absence of detrital material, the Cleaverville Group is identified as the oceanic seafloor of an immature island arc.

I collected felsic tuff in the Bedded Chert-Tuff Member of the Snapper Beach Formation in western portion of Cleaverville Beach. Sample preparation was conducted in the Kyushu University and The National Museum of Nature and Science. Zircon grains size is about 70-100 nm. The grains were grouped euhedral crystals and rounded shapes. The internal zoning patterns which mean affected by metamict of the zircons were observed by Backscatter Electron (BSE) SEM. Samples were dated by SHRIMP at The National Institute of Polar Research.

The Total of 46 analyses were obtained. In these zircons, 19 grains had concordant ages. The 9 ages were concentrated around 3100 Ma and the other ages were between 3200-3700 Ma.

From the analyzed above, I interpreted as the deposition age 3108 (+14/-7) Ma of the tuff from the youngest 9 zircons. These concordant old (3200-3700 Ma) age zircons had a characteristic round shape shown in the BSE images, and that indicates they reworked.