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Large and robust lenticular microorganisms on the young Earth

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ABSTRACT

In recent years, remarkable organic microfossils have been reported from Archean deposits in the Pilbara craton of Australia. The structures are set apart from other ancient microfossils by their complex lenticular morphology combined with their large size and robust, unusually thick walls. Potentially similar forms were reported in 1992 from the ~ 3.4 Ga Kromberg Formation (KF) of the Kaapvaal craton, South Africa, but their origin has remained uncertain. Here we report the first determination of *in situ* carbon isotopic composition ($\delta^{13}\text{C}$) of the lenticular structures in the KF (obtained with Secondary Ion Mass Spectrometry [SIMS]) as well as the first comparison of

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