

Direct cosmogenic nuclide dating of Olduvai lithic industry

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Complex T69, Bed II, Olduvai/I. de la Torre. Credit: CENIEH

Toshiyuki Fujioka and Alfonso Benito-Calvo, researchers at the Centro Nacional de Investigación sobre la Evolución Humana (CENIEH), have recently published a paper in the *Journal of Human Evolution* with the results of burial dating using the cosmogenic nuclide isochron method, applied for the first time directly to the lithic industry of the Olduvai Gorge (Tanzania).

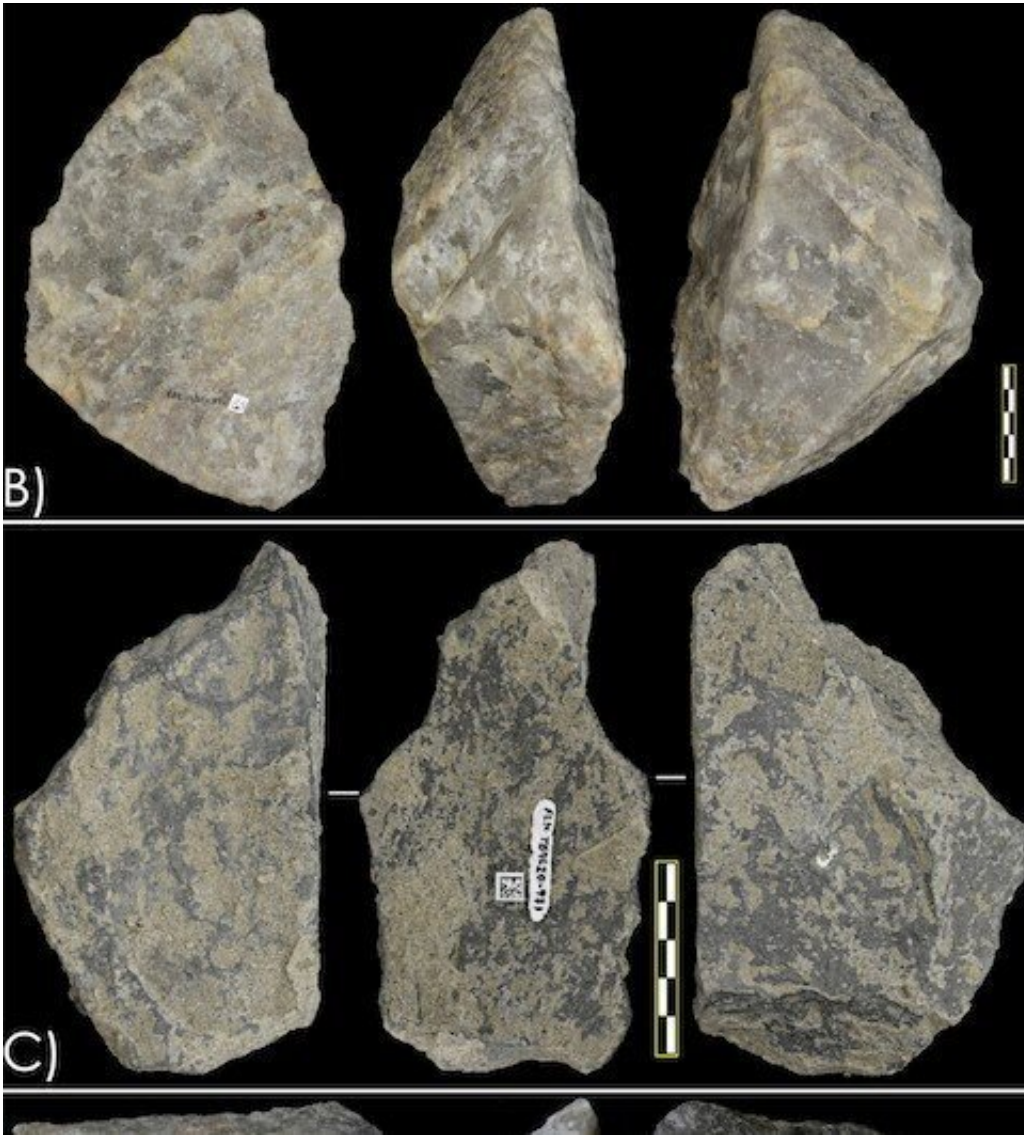
The Olduvai Gorge is known worldwide for its rich Lower Pleistocene paleontological and [archaeological record](#). This paper contributes to the challenge of building a robust geochronological framework on the archaeological sequences of the Olduvai sites through the application of cosmogenic nuclide dating.

The method has been applied to a new site called Complex T69, positioned stratigraphically in Bed II, whose chronology is not well constrained compared to the underlying Bed I, due to fewer volcanic ash layers suitable for conventional K-Ar and Ar-Ar dating.

The stratigraphic interval from middle to upper Bed II of the Olduvai Gorge is a key period for our understanding of the disappearance of Oldowan industry (typically associated with *Homo habilis*) and the emergence of the Acheulean (typically associated with *Homo erectus*).

"The novelty of our contribution is twofold. First, we have applied a radiometric method that is still relatively new in archaeology and had never been attempted at Olduvai. Second, its ability to be applied directly to lithic tools, rather than indirectly estimating the ages of underlying or overlying sediments, or of surrounding sediments by assuming an association that is not always guaranteed," explains Toshi Fujioka, first author of the paper.

The direct burial dating of stone tools using cosmogenic nuclide isochron data opens up new possibilities for future studies on [human evolution](#), particularly on time scales of 500,000 years to several million years.



Stone tools from Bed II, Olduvai/I. de la Torre. Credit: CENIEH

More information: Toshiyuki Fujioka et al, Direct cosmogenic nuclide isochron burial dating of early Acheulian stone tools at the T69 Complex (FLK West, Olduvai Bed II, Tanzania), *Journal of Human Evolution* (2022). [DOI: 10.1016/j.jhevol.2022.103155](https://doi.org/10.1016/j.jhevol.2022.103155)

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