GERZEH, A PREHISTORIC EGYPTIAN METEORITE
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Iron from meteorites has been utilized in artefacts by peoples
from different cultures, e.g., the Inuit of Greenland, who fash-
ioned knives and weapons from the Cape York meteorite [1].
One of the most ancient examples of worked iron meteorites
comes from a prehistoric Egyptian cemetery. The site of El Ger-
zeh, 40 miles south of Cairo, was excavated in 1911-1912, and
301 graves dating from around 3300 BCE were discovered [2].
A few of the graves contained rare and precious materials such as
gold and carnelian. Two graves, Tombs 67 and 133, were also
found to contain iron beads; at the time of excavation these ex-
amples of Egyptian pre-dynastic culture were considered to be
the earliest specimens of worked iron. Subsequent analysis re-
vealed the iron to contain significant levels of nickel, leading to
identification of their meteoritic origin [3]. Iron meteorites were
also used to make other items later in Egyptian history, including
a dagger blade from Tutankhamen’s tomb (18th dynasty, 1340-
1320 BCE), but no artefacts have been found to be made from
meteorite iron after this date.

The most recently published analysis of the Gerzeh iron
beads was in 1929 [3]. Our study is intended as an illustration of
the non-destructive analysis of an intact artifact, in order to allow
a better understanding of this historically rare and precious sam-
ple. Optical imaging, electron microscopy and EDS were used to
both define and analyze the bead. A thick weathering layer of
oxidized iron was easily seen; this incorporates rounded quartz
grains that originated in the grave, which was filled with sand.
Patches of the oxidized areas have degraded and partially fallen
away, probably post-excavation, allowing us to examine underly-
ing regions in which small areas of metal were observed. The
metal has an average composition of 9 wt. % Ni. The tubular
bead structure interior was also found to be filled with ferric ox-
ides and sand, at one end of the bead plant fibres of the strand
used to string the beads together were also observed.

This study explores one of the earliest examples of the use of
meteoritic iron in artefacts. It is impossible to estimate the origi-
nal mass of the meteorite: 9 beads were discovered in the two
tombs, but because of the rarity of iron in early Egypt, it is as-
sumed all beads were produced from the same meteorite. The
meteorite must have fallen prior to approximately 3300 BCE, as
this is the accepted date of the tombs. It is also possible that it
fell beyond Egyptian borders as some of the other materials
found in the tombs are believed to have arrived in Egypt through
foreign trade routes.

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