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Evaluation of possible archaeometallurgical residues from the N11 Gorey-Arklow

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Evaluation of possible archaeometallurgical residues from the N11 Gorey-Arklow

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Abstract

Samples were evaluated from sites 1, 22 and 26. None of the material was evidence for archaeometallurgical activity.

The material from site 1 (A003/055) was a vitrified pebble. Such materials may be generated during metallurgical processes, but in the absence of any associated certain metallurgical material, it is more likely that this has been generated in a non-metallurgical high temperature environment.

The specimen from site 22 (A003/040) was a broken pebble of a high-grade iron ore.

Site 26 (A003/044) yielded small patches of development of a mottled bog ore (iron pan) in the interstices of the burnt stone debris. It is unlikely that there is a direct relationship with archaeological activity, but that oxidation of natural iron-rich groundwaters was able to occur in the voids between the stones.

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Methods

The specimens were examined under a low-powered binocular microscope.

Results

Site 1 (A003/055)
The material (#4) from Site 1 (A003/055), C001, was a vitrified pebble. The pebble shows evidence for expansion of the interior during the vitrification, which has cracked the pebble. The interior has largely melted to produce a dark, almost black, glass. The glass bears large vesicles, the formation of which probably created much of the observed expansion. The gas forming the vesicles must have been released during the heating and melting process, and is likely to indicate a high proportion of either carbonate or water in the original rock.

Such materials may be generated during metallurgical processes, but in the absence of any associated certain metallurgical material, it is more likely that this has been generated in a non-metallurgical high temperature environment.

Site 22 (A003/040)
The specimen (#4) from Site 22 (A003/040), C001, was a broken pebble of a high-grade iron ore. Colour is variable from yellowish, through brown to red, suggesting variable proportions of goethite (FeO.OH) and haematite (Fe_2O_3).

The visible texture is not particularly diagnostic of origin. The material is a rock ore (rather than bog iron ore), but it is unclear whether it is a primary iron ore or a gossan (formed by secondary processes from sulphide ores).

Without more detailed analysis the provenancing of this piece is not known, but there is no intrinsic reason to suspect material of this type to be other than a natural occurrence in this area.

Site 26 (A003/044)
Site 26 (A003/044), C086, yielded 10 specimens with small patches of development of a mottled bog ore (iron pan) in the interstices of the burnt stone debris.

Where the stones are close contact the encrustation may be film-like and is dark in colour (possibly because of included charcoal debris). In some of the larger voids the iron mineralization forms spheroidal structures, representing well-developed mottles, of a brown colour. The colour suggests that the mineralogy of the spheroids is an iron oxy-hydroxide, quite possibly goethite.

It is unlikely that there is a direct relationship with archaeological activity, but that oxidation of natural iron-rich groundwaters was able to occur in the voids between the stones.

Interpretation

None of the material in this collection is necessarily indicative of metallurgical activity.

Evaluation of potential

Unless further evidence more strongly suggests a metallurgical association for any of these materials, then no further analytical investigation is warranted.

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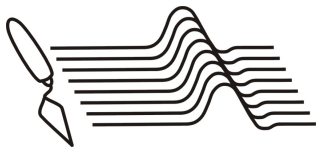

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