Thin-Section Analysis of Prehistoric Pottery from Cossington, Leicestershire

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Samples of four prehistoric vessels from Cossington, Leicestershire, were submitted for thin-section analysis (Table 1). Thin sections were produced by Steve Caldwell, University of Manchester, and stained using Dickson's method (Dickson 1965).

Table 1

TSNO	Action	class	Trench	Context	REFNO
V4086	TS	POTTERY	2	F16	A982.1975.8.0
V4085	TS	POTTERY	1	F24	A982.1975.6
V4088	TS	POTTERY	1	F6	
V4087	TS	POTTERY	1	F9	A982.1975.5

Thin Section Analysis

V4085

The following inclusion types were noted:

- Acid Igneous Rock. Abundant subangular fragments of a medium-grained rock, c0.5mm to 2.0mm across, composed of well-sorted euhedral crystals, most of which are zoned feldspars with quartz/feldspar intergrowth, including graphic intergrowth. Opaque accessory minerals c.0.1mm across are present. Some large twinned grains are clouded with micaceous alteration products (sericite or muscovite).
- Basic Igneous Rock. A single subangular fragment 2.0mm across containing sparse euhedral crystals of olivine and an unidentified brown mineral. The groundmass is composed of altered glass and abundant opaque grains c.0.05mm across.
- Clay Pellets. Abundant angular and subangular fragments with a similar colour and texture to the groundmass, up to 2.0mm across. These are probably clay relicts.
- Quartz. Sparse rounded and subangular grains up to 0.5mm across. Most are unstrained but polycrystalline grains with a strained mosaic crystallisation are present.

The groundmass consists of optically anisotropic baked clay minerals, sparse angular quartz up to 0.05mm across and rare muscovite laths up to 0.1mm long. The core and interior of the vessel are opaque as a result of carbon and the outer margin is oxidized.

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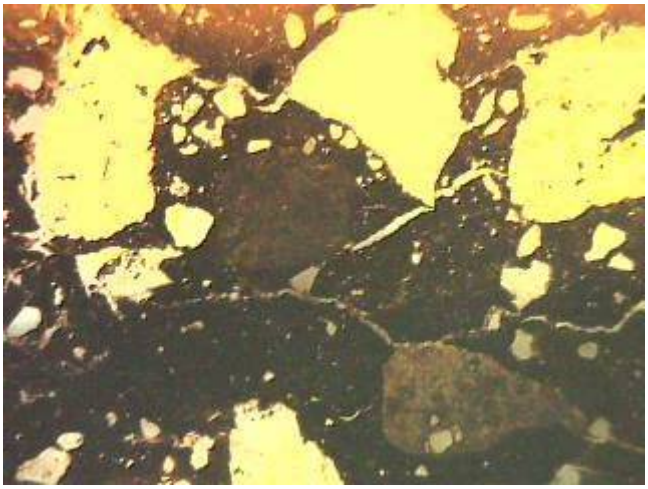

Figure 1 V4085

V4086

The following inclusion types were noted:

- Quartz. Moderate subangular and rounded grains up to 0.4mm across. Most are unsrtained, monocrystalline grains.
- Sandstone. Rare rounded fragments of a fine-grained sandstone up to 0.4mm across with grains c.0.1mm to 0.2mm across.
- Chert. Rare rounded fragments up to 0.4mm across.
- Clay Pellets. Moderate subangular fragments with no visible inclusions. Some have an opaque core and were originally organic.
- Voids (probably bivalve shell). Rare voids up to 1.5mm long and 0.3mm wide.
- Muscovite. Rare laths up to 0.2mm long.

The groundmass consists of optically anisotropic baked clay with few inclusion less than 0.1mm across.

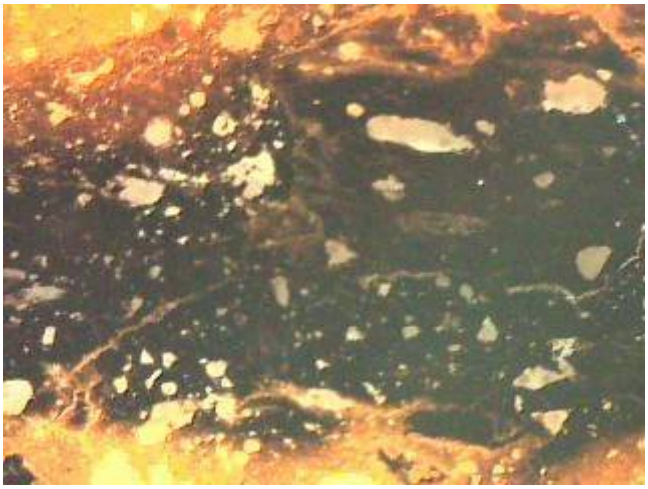

Figure 2 V4086

V4087

The following inclusion types were noted:

- Acid Igneous Rock. Abundant subangular fragments up to 2.0mm across similar in character to those n V4085 but with perhaps a higher quartz content and with biotite.
- Quartz. Abundant subangular and rounded grains up to 0.3mm across
- Chert. Sparse rounded grains up to 0.4mm across.
- Clay pellets. Sparse rounded clay pellets up to 0.5mm across and with the same texture and quartz inclusions as the groundmass.
- Muscovite. Sparse laths up to 0.2mm long.

The groundmass consists of optically anisotropic baked clay minerals with few visible inclusions.

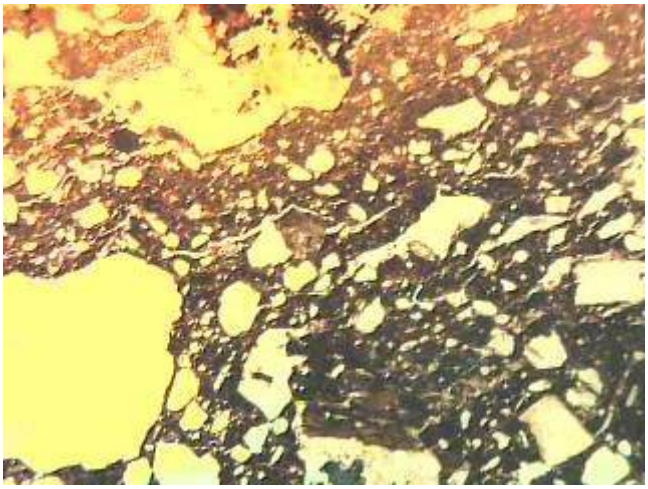

Figure 3 V4087

V4088

The following inclusion types were noted:

- Basic igneous rock. Moderate fragments similar in character to that in V4085.
- Quartz. Moderate rounded and subangular grains, up to 0.4mm across. Mostly monocrystalline and unstrained but including strained and polycrystalline grains. In addition, a single overgrown grain 0.7mm across was noted.
- Chert. A single angular fragment 1.0mm long and 0.3mm wide.
- Clay pellets. Moderate subangular fragments of similar colour and texture to the groundmass.

The groundmass consists of optically anisotropic baked clay minerals with sparse angular quartz and muscovite laths up to 0.1mm long. The groundmass is opaque as a result of carbon except at the original surfaces.

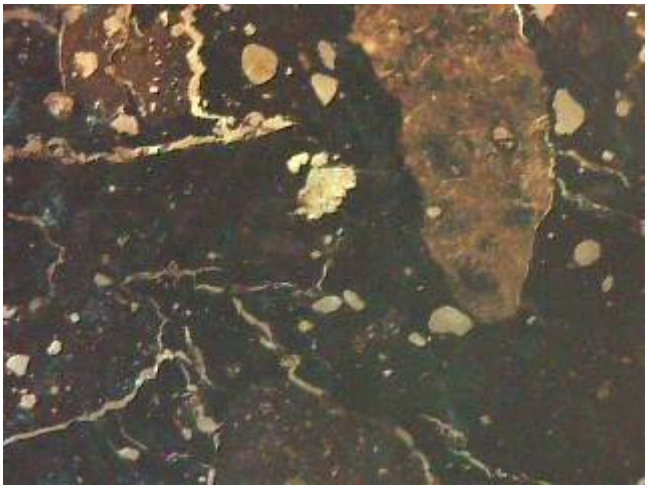

Figure 4 V4088

Discussion

Cossington lies immediately to the east of the Mountsorrel inlier which is composed on a mixture of rocks of pre-Cambrian age, including the Mountsorrel granodiorite (Hains & Horton 1969, 6-9 . Boulder clay in this area includes Lower Jurassic *gryphaea* and is presumably in the main re-deposited Lower Jurassic material (Hains & Horton 1969, 89-101).

The rock fragments found in V4085 and V4087 show some signs of rounding and therefore come from a natural coarse sand or gravel rather than fire-cracked rock fragments or a talus formed at the base of an outcrop. Their petrology suggests that they are syenite/markfieldite which outcrops about ten miles west of Cossington (Hains & Horton 1969). Sands composed of Mountsorrel granodiorite and other rocks of Charnian origin occur to the south, southwest and southeast of the outcrops. Probably, these two fabrics were made of raw materials collected to the south of Cossington.

The basic igneous rock fragments noted in V4088 and, rarely, in V4085, might be of local pre-Charnian origin (for example, the Nuneaton outcrop, Hains & Horton 1969, 6) although the presence of a large overgrown quartz grain suggests the presence of Millstone Grit. If so, then these rock fragments may be from the Derbyshire Traps (although a local outcrop of Millstone Grit occurs near Melbourne, to the northwest of Cossington, Hains & Horton 1969, 38). As with the acid igneous rocks, however, there are signs of rounding which preclude the use of crushed rock fragments or talus. The presence of a rounded quartzose sand of Triassic source excludes a source in the Peak District, however, and favours either a northeastern Leicestershire origin for the rocks or glacial erratics from northern England.

The inclusionless clay noted in V4086 is likely to be of Jurassic origin whilst the inclusions are probably derived from a rounded quartzose sand of Triassic origin. Such sands form the majority of the terrace sands found in the Trent valley but have a wider distribution. This vessel may therefore have been produced in the Trent valley using an outcrop of lower Jurassic clay, but it is more likely to have been made from a local boulder clay.

Bibliography

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Hains, B. A. and Horton, A. (1969) *British Regional Geology: Central England*, HMSO, London