

Petrological analysis of Anglo-Saxon Pottery from Floral Street, Westminster, London

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Five samples of Early to mid Anglo-Saxon pottery from Floral Street, Westminster, were submitted for petrological analysis. Each of the samples proved to be petrologically distinct and in some cases it could be demonstrated that the vessels could not be locally produced.

Methodology

Thin sections were produced by Paul Hands, of the Department of Earth Sciences, University of Birmingham. The sections were polished, to allow future study using reflected light, which reveals details of the opaque inclusions which would otherwise be lost, and stained using Dickson's Method (Dickson 1965), in order to distinguish dolomite from ferroan and non-ferroan calcite.

Petrological Description

ESST? (Visual description only)

Description

Rare fragments of water-polished rounded quartz up to 2.0mm across.

Sparse fragments of fine-grained sandstone up to 2.0mm across. The sandstone is composed of a well-sorted, poorly cemented quartz sand in which some of the grains are overgrowth. There is no sign of any cement and the rock appears to be only loosely cemented.

The groundmass consists of abundant quartz grains probably in the main derived from the sandstone and some muscovite. The actual frequency of muscovite is difficult to determine visually since the overgrown quartz grains catch the light in a similar manner.

Comments

This fabric is quite distinctive but the identify of the sandstone cannot be determined without comparative research

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<http://www.postex.demon.co.uk/index.html>

A copy of this report is archived online at
<http://www.avac.uklinux/potcat/pdfs/avac2002092.pdf>

MSFGC? V1129

Description

Moderate angular flint fragments up to 2.0mm across. Some are brown-stained with trace microfossils (*radiolaria*?) and others white. All have a weathering crust which suggests that they were not deliberately crushed but come from an angular flint gravel. There is no evidence for rounding or shock fractures, as are found in flints from Tertiary deposits in the London basin.

Moderate rounded quartz grains up to 2.0mm across. The outlines of the grains suggest that they are from the lower Greensand, or its equivalents (such as the Woburn sands).

Sparse rounded red clay pellets up to 1.0mm across.

The groundmass consists of optically anisotropic clay minerals, abundant angular quartz grains up to 0.1mm across, moderate laths of muscovite up to 0.1mm long and sparse glauconite up to 0.2mm.

Comments

The characteristics of this sample suggest that it originated in an area of Cretaceous rocks, in other words outside of the Thames basin. Whether to the north, west or south of London is not clear from this evidence but may become clearer once samples of flint/quartz tempered wares from other parts of the southeast are examined.

MSOL V1132

Description

Moderate rounded optically isotropic light brown inclusions up to 0.5mm across. A few of these appear to have an oolitic structure and some have either weathered out or, less likely, been plucked out of the sample during the production of the thin-section. It is likely that these inclusions are oolitic phosphate nodules, a highly distinctive inclusion type.

A possible fragment of bone, or perhaps a piece of bivalve shell composed or replaced by phosphate, 0.5mm long and 0.1mm thick.

Sparse rounded inclusionless laminated clay pellets up to 1.0mm long.

A groundmass of abundant angular quartz up to 0.2mm long, sparse chert/flint up to 0.2mm long, sparse feldspar laths up to 0.2mm long, sparse muscovite up to 0.2mm long and sparse glauconite up to 0.1mm long.

Comments

The inclusions in this fabric are extremely unusual. Highly phosphatic strata occur in a number of formations in the Cretaceous and it is quite clear that this fabric did not originate within the Thames basin. However, its actual source is unknown. It might be the Weald, or the Cretaceous deposits west and north of London.

SLGS? V1130

Description

Moderate organic inclusions, some over 3.0mm long and some partially filled with a red phosphatic deposit after burial.

Sparse rounded calcareous algae nodules up to 2.0mm across. Some of these have a heat-altered crust.

Sparse rounded quartz up to 2.0mm.

Sparse subangular quartz up to 0.3mm across.

The groundmass is black and opaque (due to carbon) and contains sparse quartz silt and muscovite laths

Comments

All of the characteristics in this fabric could be found within the Thames basin.

SLGSD? V1131

Description

Moderate rounded quartz up to 0.5mm across, some with iron-stained veins.

Sparse angular, brown-stained flint up to 1.0mm across.

The groundmass consists of abundant angular quartz up to 0.2mm across and sparse muscovite laths up to 0.3mm long.

Comments

The quartz and flint sand in this fabric is characteristic of the Greensand and its equivalents but it is a detrital sand and so may have been deposited within the Thames basin (for example, similar sands occur at Kingston-upon-Thames). The muscovite laths are unusually large but this is not in itself a feature which can be used to pinpoint the source more closely. Similar characteristics occur in a number of clays in the southeast of England, both within the Thames basin and without.

SSANA? V1133

Description

Abundant subangular quartz and sparse plagioclase feldspar up to 0.4mm across.

Moderate rounded red clay pellets up to 1.5mm across with a concentric structure and containing abundant altered glauconite grains up to 0.2mm across.

Moderate rounded pellets of red clay with optically coherent extinction and no visible inclusions, up to 1.0mm across.

Moderate rounded altered glauconite up to 0.4mm (and some un-altered grains)

Groundmass of highly birefringent, anisotropic clay minerals with few visible inclusions.

Comments

It is likely that the glauconite pellets are natural inclusions in the clay. Glauconitic clays do not occur within the Thames basin but are very common in the Weald but also in Cretaceous deposits elsewhere in England. The remaining characteristics of the fabric do not provide any further clue as to the source, although they are unusual.

SSANI (Visual description only)

Description

Sparse rounded and subangular quartz up to 1.0mm across. Some of the grains are water-polished but others have a matt, wind ablated surface.

Sparse thin-walled shell, possibly freshwater mollusc, up to 0.5mm long.

The groundmass contains abundant, ill-sorted angular quartz and sparse muscovite laths up to 0.1mm.

Comments

All of these characteristics can be found in clays and sands within the Thames basin and the texture of the clay is similar to that of Thames valley brickearth. However, there is nothing within the fabric which proves a local origin either!

Overall Conclusions

Several of the fabrics submitted for analysis contain distinctive inclusions. In a few cases these conclusions point to a non-local origin or allow a local origin but in most cases further comparative work is required to localise the source.

All of the samples have fabrics which could have been produced in the southeast of England.

Bibliography

Dickson, J. A. D. (1965) "A modified staining technique for carbonates in thin section."
Nature, 205, 587.

Appendix One

List of Samples

Action:	Context:	TSNO:	MoLSS Fabric Code:
VISUAL ID	1268		ESST?
VISUAL ID	1206		SSANI
PTS	1120	V1129	MSFGC?
PTS	1297	V1130	SLGS?
PTS	1361	V1131	SLGSD?
PTS	1243	V1132	MSOL
PTS	1361	V1133	SSANA?