



a new method for collecting residue samples in remote locations

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Laboratory based sampling of (portable) archaeological materials for the study of use-related residues (e.g., starch/phytoliths) is usually undertaken by submersion in an ultrasonic bath.

Field based sampling poses significant logistical challenges. Clear examples are non-portable surfaces (e.g., large blocks and modified bedrock), or where material must stay on country. Previously, pipettes and PVS peels were used, but were limited by efficacy and small volumes.

Such problems need innovative solutions.

Here we present a new method that improves sample size and sampling efficiency in the laboratory and the field.

Old: Pipette/PVS[^]/Affinis* Ring

Sampling methods rely on the application of water to the stone surface. Water can rapidly disperse making recovery difficult. A PVS HB/Affinis LB ring retains the water by surface tension. A nylon pipette tip can safely agitate/scrape the surface to dislodge residues. Metal probes/tweezers are not used as they can damage the surface. The sample is collected with a pipette and transferred to a tube.



*decamethylcyclopentasiloxane + dodecamethylcyclohexaneasiloxane, light body; [^]polyvinyl siloxane, heavy body ; difference between the two is in viscosity

New: Portable Ultrasonic Probe

An ultrasonic probe (below right) is used in scientific research and industrial applications for cell disruption, cleaning and dispersion. For residue analysis it is used to dislodge particles from the artefact surface using the same principles as an ultrasonic bath (a process called cavitation). Images below show the probe in use on a ground stone tool. Note the targeted sampling potential.



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Continuing: Ultrasonic Bath



Whole or partial immersion of an artefact in an ultrasonic bath is an efficient method for recovering residues. The method is an important tool though is restricted to smaller size artefacts and is only really practical in a laboratory.

Power Source and other Supplies

- Lithium battery/inverter (above)
- Affinis Light Body and Applicator
- Perspex tubing cut to size (wells)
- Water for Injection (10ml ampoules)
- 15ml centrifuge tubes
- Transfer Pipettes/Mixing Tips
- Powder free gloves
- Alcohol Swabs/Kim Wipes



Effective Field Sampling



Perspex tubes are attached using the Affinis LB. Water plus extractions are transferred to centrifuge tubes then processed in the laboratory. Affinis LB (PVS HB) rings and peels can be examined for usewear.

