

Life Sciences Reporting Summary

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Please do not complete any field with "not applicable" or n/a. Refer to the help text for what text to use if an item is not relevant to your study. [For final submission](#): please carefully check your responses for accuracy; you will not be able to make changes later.

► Experimental design

1. Sample size

Describe how sample size was determined.

The entire surface of the archaeological object described in our manuscript was analysed and all the lines present on it were examined and documented. Thus, the sample size corresponds to the sum of all lines available for study. The same applies to the experimental lines that we made and all these were analyzed

2. Data exclusions

Describe any data exclusions.

No data were excluded from the analysis

3. Replication

Describe the measures taken to verify the reproducibility of the experimental findings.

Raman and SEM analyses of residues, and roughness measurements, both inside and outside the drawn lines on the object were conducted in as many places as possible. In the analyses of the archaeological object reproducibility was ensured by repeating analyses at different locations. However, the number of these analyses were circumscribed by the relatively small size of the object, the fact that a relatively large area on one of its aspects is covered by a white 'varnish', the state of preservation of the surface as well as for conservation reasons. The sample size of the experimental lines was determined by availability of silcrete flakes, similar in size to L13, that were recovered on the Blombos Cave MSA talus and were out of context. For conservation reasons we were not able to use plotted flakes recovered in situ. These out of context silcrete flakes had suitable granulometry on which to conduct the experiments. The number of roughness analyses on these flakes was determined by the number of spots analyzed on the archaeological object in order to contrast comparable samples. In the case of the experimental lines two sub-populations of 24 lines (SI Table 1, SI figure 4) were considered sufficient to identify the degree of correlation between the line width and the crayon facet width.

4. Randomization

Describe how samples/organisms/participants were allocated into experimental groups.

Each new set of experimental lines was made on the available silcrete flakes that randomly came out of Blombos Cave deposits that were leaching onto the talus

5. Blinding

Describe whether the investigators were blinded to group allocation during data collection and/or analysis.

The investigators were not blinded during the collection and analysis of data

Note: all in vivo studies must report how sample size was determined and whether blinding and randomization were used.

6. Statistical parameters

For all figures and tables that use statistical methods, confirm that the following items are present in relevant figure legends (or in the Methods section if additional space is needed).

n/a Confirmed

- ☐ ☒ The exact sample size (*n*) for each experimental group/condition, given as a discrete number and unit of measurement (animals, litters, cultures, etc.)
- ☐ ☒ A description of how samples were collected, noting whether measurements were taken from distinct samples or whether the same sample was measured repeatedly
- ☐ ☒ A statement indicating how many times each experiment was replicated
- ☐ ☒ The statistical test(s) used and whether they are one- or two-sided
Only common tests should be described solely by name; describe more complex techniques in the Methods section.
- ☒ ☐ A description of any assumptions or corrections, such as an adjustment for multiple comparisons
- ☐ ☒ Test values indicating whether an effect is present
*Provide confidence intervals or give results of significance tests (e.g. *P* values) as exact values whenever appropriate and with effect sizes noted.*
- ☒ ☐ A clear description of statistics including central tendency (e.g. median, mean) and variation (e.g. standard deviation, interquartile range)
- ☐ ☒ Clearly defined error bars in all relevant figure captions (with explicit mention of central tendency and variation)

See the web collection on [statistics for biologists](#) for further resources and guidance.

► Software

Policy information about [availability of computer code](#)

7. Software

Describe the software used to analyze the data in this study.

The softwares we used are available end-user applications. They were applied to increase focus when taking photos under the microscope and to produce 3D reconstructions (LAS Montage and Leica Map DCM 3D software); produce tracings from photos (Adobe Illustrator), visualize and compare Raman spectra (OPUS 7.2.); visualize and store surface data obtained with a confocal microscope (SensoScan 6); conduct scale sensitive fractal analysis (SSFA) using SensoMap 7.4.8443 on these data; and create by photogrammetry a 3D model of the archaeological object (Agisoft 1.2.5)

For manuscripts utilizing custom algorithms or software that are central to the paper but not yet described in the published literature, software must be made available to editors and reviewers upon request. We strongly encourage code deposition in a community repository (e.g. GitHub). *Nature Methods* [guidance for providing algorithms and software for publication](#) provides further information on this topic.

► Materials and reagents

Policy information about [availability of materials](#)

8. Materials availability

Indicate whether there are restrictions on availability of unique materials or if these materials are only available for distribution by a third party.

The archaeological object described in our manuscript is unique. All archaeological material recovered from Blombos Cave is stored and curated, after study, at the IZIKO South African Museum, Cape Town and is available for study there.

9. Antibodies

Describe the antibodies used and how they were validated for use in the system under study (i.e. assay and species).

not applicable

10. Eukaryotic cell lines

a. State the source of each eukaryotic cell line used.

not applicable

b. Describe the method of cell line authentication used.

not applicable

c. Report whether the cell lines were tested for mycoplasma contamination.

not applicable

d. If any of the cell lines used are listed in the database of commonly misidentified cell lines maintained by [ICLAC](#), provide a scientific rationale for their use.

not applicable

► Animals and human research participants

Policy information about [studies involving animals](#); when reporting animal research, follow the [ARRIVE guidelines](#)

11. Description of research animals

Provide all relevant details on animals and/or animal-derived materials used in the study.

not applicable

Policy information about [studies involving human research participants](#)

12. Description of human research participants

Describe the covariate-relevant population characteristics of the human research participants.

Four researchers, co-authors of the manuscript (CH, FdE, LD, AQ) were involved in the experiments. In archaeology it is common practice that experiments requiring a specialized expertise in prehistoric technology are conducted by the researchers themselves.