An evaluation of the use of the Surtronic S128 to assess appropriate cleaning techniques for historic materials.
By Naomi Watts-Kitto and Jocelyn Cook

Introduction

Any treatment undertaken by a conservator should not affect the historic value of an object (Caple 2000). Important evidence of historic use can be lost in the treatment process and conservators often face a difficult decision on how best to preserve the historical and physical integrity of the object (Price et al. 1996). During this project, we explored the use of the Surtronic S128, a surface finish characterisation machine manufactured by Taylor Hobson©, and its application to assist conservators in choosing appropriate treatment methods. By quantitatively characterising the surface of a selection of material types common to conservators, cleaning methods that affect surface texture can be accurately evaluated (Daly 2016).

Methodology

The Surtronic S128 was used to characterise the surface of lead, copper, silver and steel samples. 2D surface finish characterisation software, TalyProfile©, was then used to convert the data gathered into surface roughness profiles for each sample.

Surface cleaning techniques were carried out on the samples using:

- Glass bristle brushes
- Abrasive polishes
- Air abrasive system
- Wire wool (0000 grade)
- Hog's hair brushes

The surface roughness was re-characterised following the cleaning tests, and the data compared for evidence of change.

Scanning Electron Microscopy (SEM) was also used to corroborate these results.

Results and Discussion

Although the cleaning methods described above are commonly used by conservators, the surface roughness profiles show material loss or redistribution as a result of cleaning across all the samples, regardless of the cleaning techniques used. The sensitivity of the Surtronic S128 allows for comprehensive topographical sample analysis and offers conservators an affordable and portable analytical instruments for undertaking quantifiable analysis.

Fig.1: The authors N. Watts-Kitto (left) and J. Cook (right) using the Surtronic S128. © 2018 Naomi Watts-Kitto. All rights reserved.
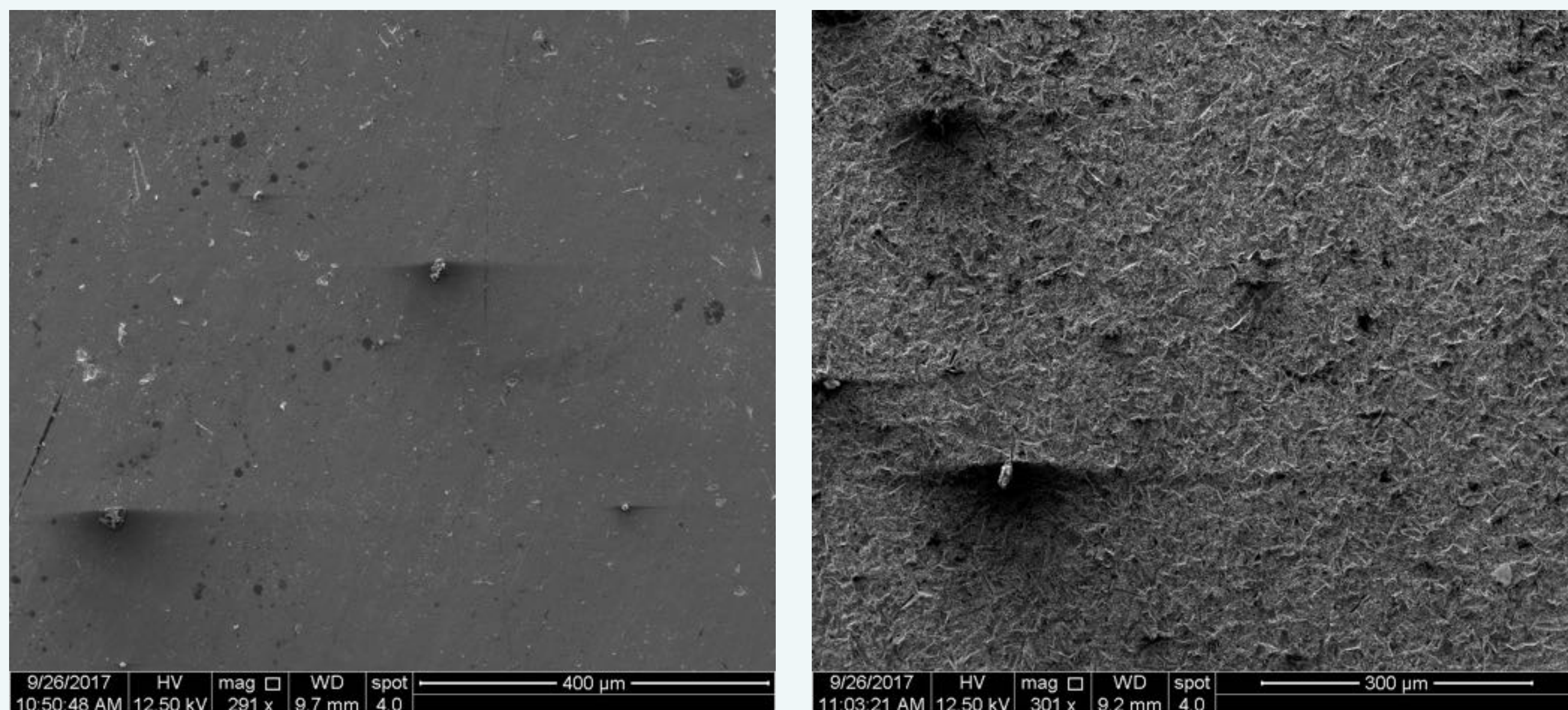

Fig. 2: SEM images showing the surface of a copper sample before and after air abrasive cleaning (respectively). © 2018 Naomi Watts-Kitto. All rights reserved.
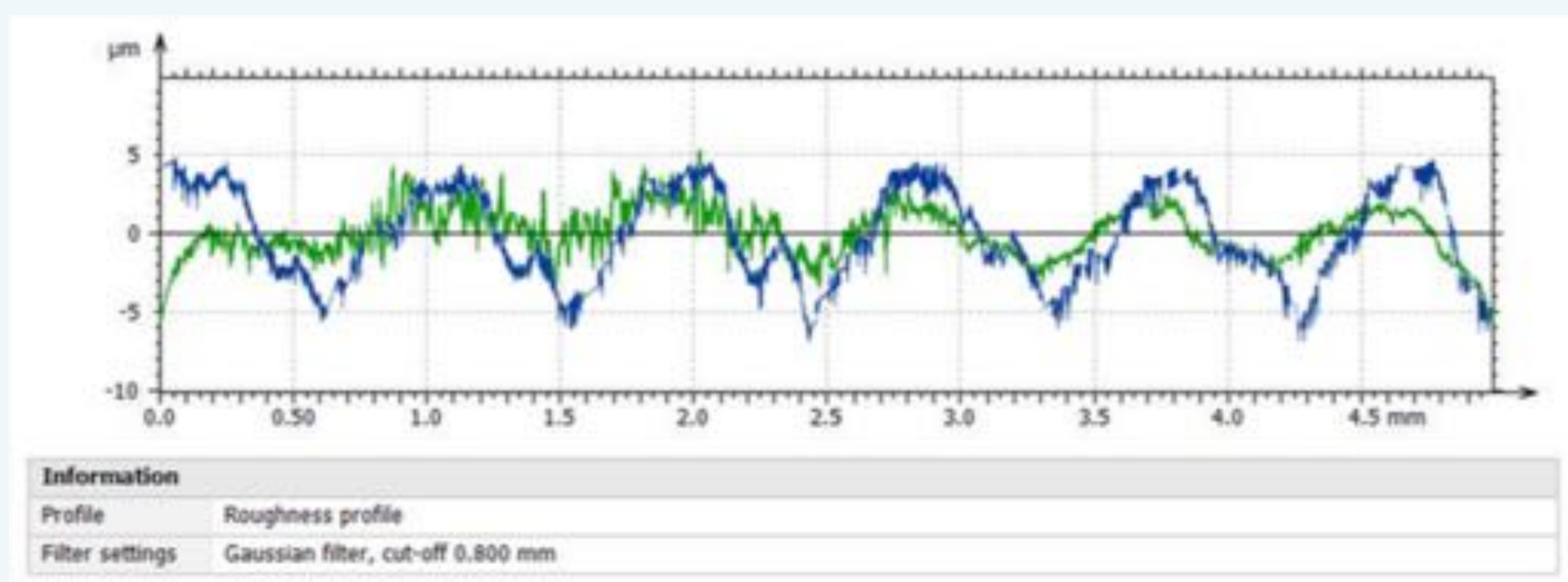

Information	
Profile	Roughness profile
Filter settings	Gaussian filter, cut-off 0.800 mm

Fig. 3: A roughness profile for a copper sample cleaned with the air abrasive.

Blue = Before cleaning.

Green = After cleaning.

References

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