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1 Supplementary information

2 **High-accuracy methodology for the integrative restoration for archaeological teeth by using**
3 **reverse engineering techniques and rapid prototyping**

4

5 **Microtomographic acquisition of RSS2 prior to sampling**

6 RSS2 (Ldm₂) was analyzed by X-ray microCT at the Department of Physics and Astronomy of the
7 University of Bologna at 130 kVp, 1.32 mAs/projection, 0.1 mm Fe filtration, 900 projections over
8 360°, for a total scan time of 279 minutes. The tomographic images were reconstructed using a
9 parallelized Feldkamp algorithm (Feldkamp et al., 1984) after the application of beam hardening
10 correction raw data correction. The reconstructed volume consisted of an array of 950 x 950 x 770
11 cubic voxels, each with a side length of 13.8 µm.

12

13 **Microtomographic acquisition of RSS2 after sampling**

14 RSS2 (Ldm₂) after sampling was analyzed by X-ray microCT at the Department of Physics and
15 Earth Science of the University of Ferrara. The scanning procedure was performed using a
16 microFocus X-ray tube (Hamamatsu L9421, minimum focal spot size 5 µm) at 70 kVp, 0.1 mAs,
17 0.5 mm Al filtration, 360 projections over 360°, for a total scan time of 20 minutes. The
18 tomographic images were reconstructed using a FDK algorithm after the application of beam
19 hardening correction. The reconstructed volume has a linear voxel size of 30 µm.

20

21 **Microtomographic acquisition of the printed portion of RSS2**

22 The printed portion of RSS2 (Ldm₂) was analyzed by X-ray microCT at the Department of Physics
23 and Earth Science of the University of Ferrara. The scanning procedure was performed using a
24 microFocus X-ray tube (Hamamatsu L9421, minimum focal spot size 5 µm) at 50 kVp, 0.1 mAs,
25 0.5 mm Al filtration, 360 projections over 360°, for a total scan time of 20 minutes. The
26 tomographic images were reconstructed using a FDK algorithm after the application of beam
27 hardening correction. The reconstructed volume has a linear voxel size of 30 µm.

28

29 **Microtomographic acquisition of Pradis 1 prior to sampling**

30 Pradis 1 was analysed by laboratory X-ray microCT (minimum focal spot size of the source: 5 µm)
31 at the TomoLab station of the Elettra Sincrotrone Trieste (Basovizza, Trieste, Italy) (Zandomeneghi
32 et al., 2010). The scanning procedure was performed using a sealed microfocus X-ray tube
33 (Hamamatsu L9181, minimum focal spot size 5 µm) at 130 kVp, 61 µA, 1.5 mm Al filtration, 2400
34 projections over 360°, for a total scan time of 280 minutes. The tomographic images were
35 reconstructed using a FDK algorithm after the application of beam hardening correction. The
36 Pore3D software (Brun et al., 2010) was used on the reconstructed axial slice for ring artifact
37 removal. The reconstructed volume has an isotropic voxel size of 5.55 µm.

38

39 **Microtomographic acquisition of Pradis 1 after sampling**

40 Pradis 1 after sampling was analyzed by an X-ray microCT at the Department of Physics and Earth
41 Science of the University of Ferrara. The scanning procedure was performed using a microFocus X-
42 ray tube (Hamamatsu L9421, minimum focal spot size 5 μm) at 70 kVp, 0.1 mAs, 0.5 mm Al
43 filtration, 360 projections over 360° for a total scan time of 20 minutes. The tomographic images
44 were reconstructed using a FDK algorithm after the application of beam hardening correction. The
45 reconstructed volume has a linear voxel size of 30 μm .

46

47 **Microtomographic acquisition of the printed portion of Pradis 1**

48 The printed portion of Pradis 1 was analyzed by X-ray microCT at the Department of Physics and
49 Earth Science of the University of Ferrara. The scanning procedure was performed using a
50 microFocus X-ray tube (Hamamatsu L9421, minimum focal spot size 5 μm) at 50 kVp, 0.1 mAs,
51 0.5 mm Al filtration, 360 projections over 360°, for a total scan time of 20 minutes. The
52 tomographic images were reconstructed using a FDK algorithm after the application of beam
53 hardening correction. The reconstructed volume has a linear voxel size of 30 μm .

54

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