Osteoclastic Resorption Of Enamel In Third Molars.

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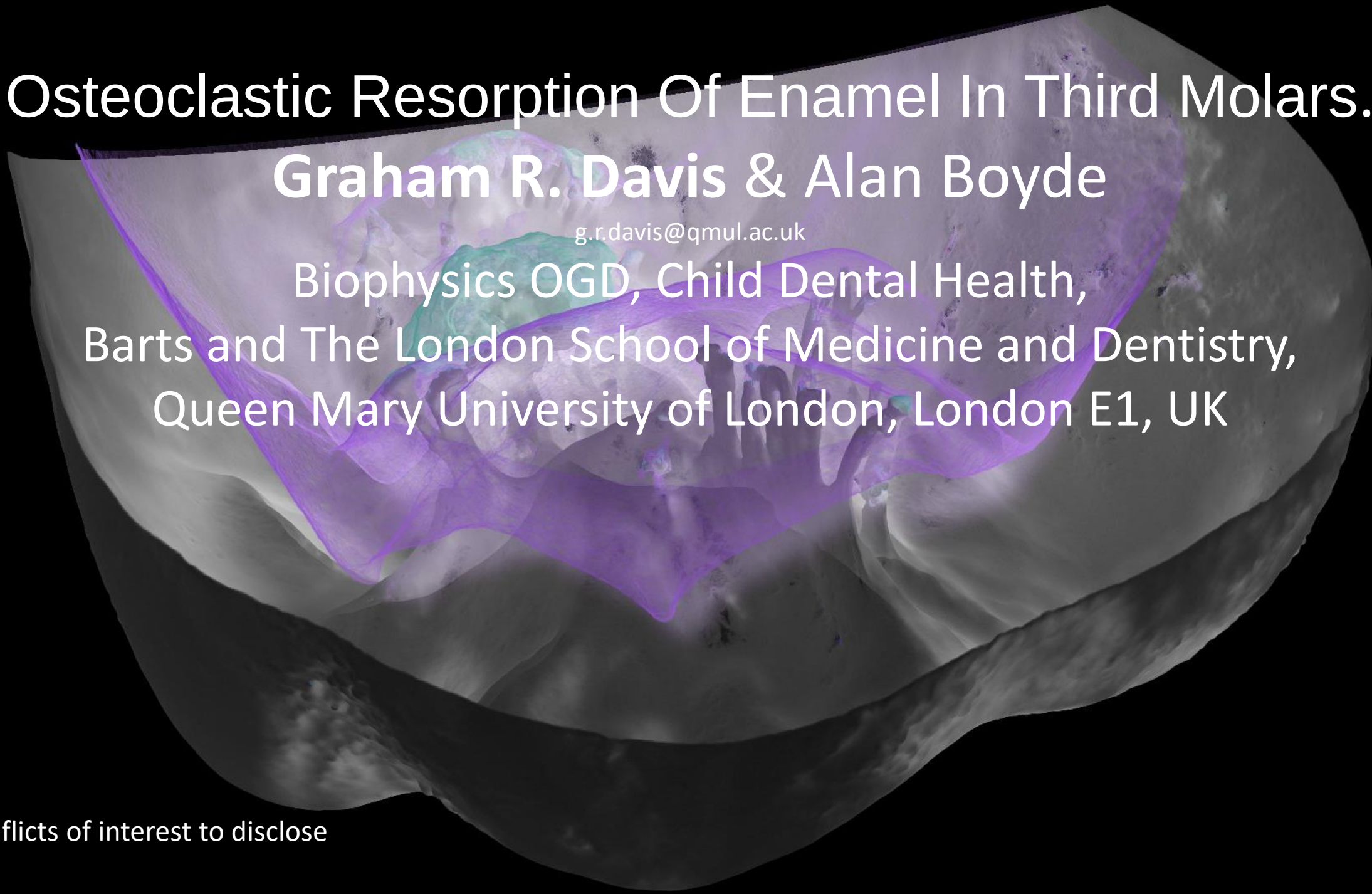
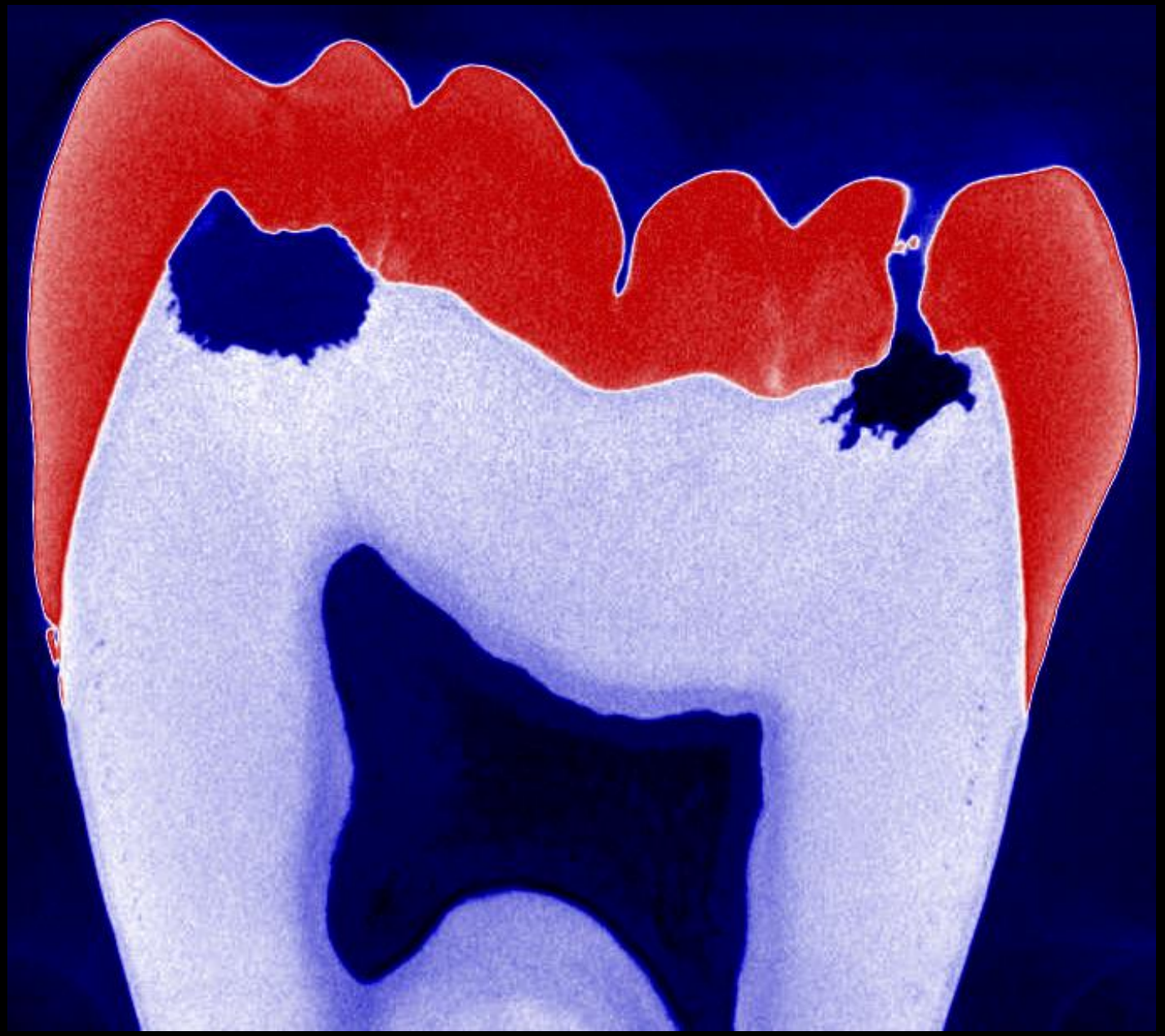


No conflicts of interest to disclose

Objectives and Methods



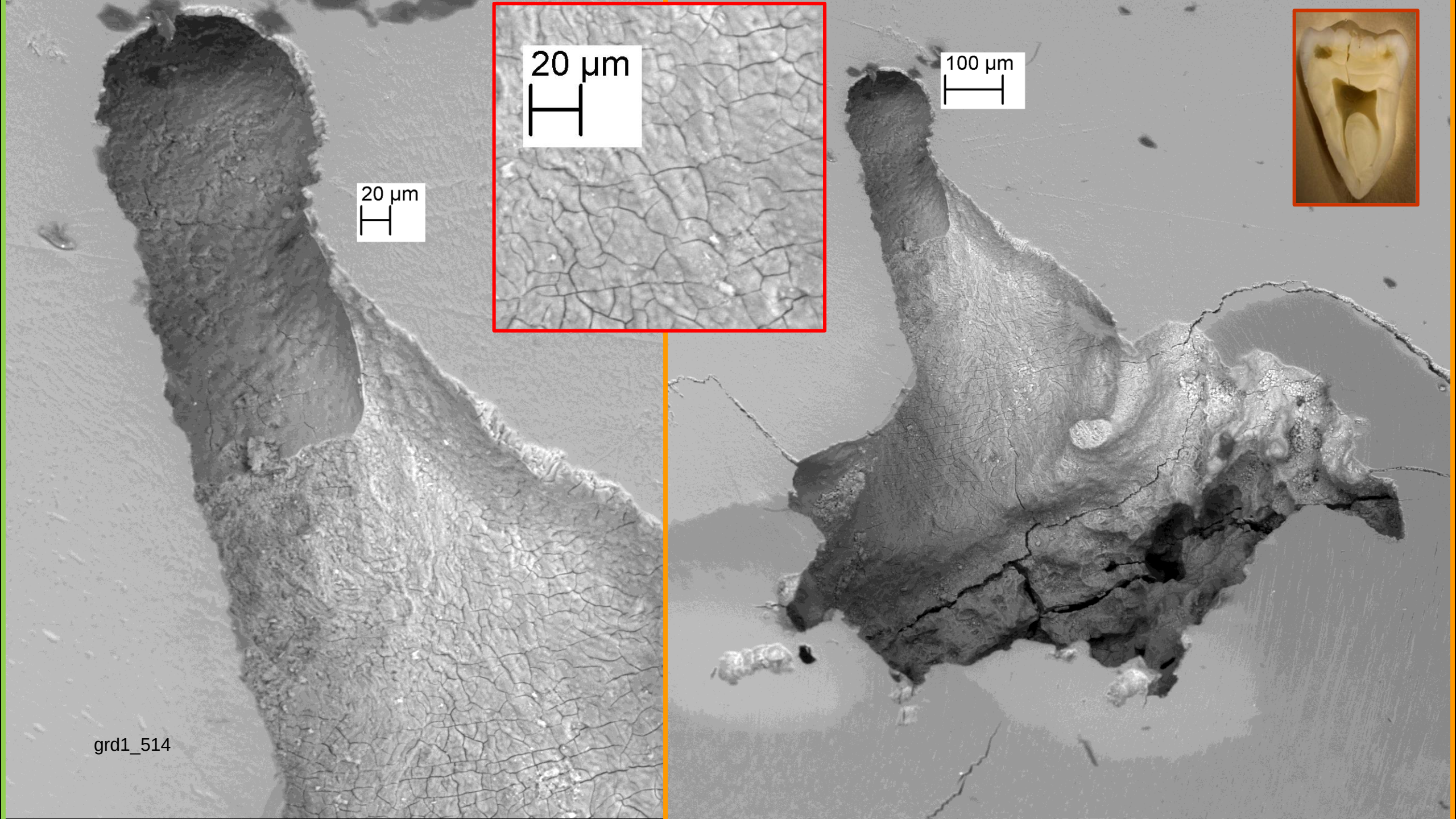
There are several reports in the literature of atypical radiolucencies in human third molars which have arisen by external resorption extending from the occlusal surface. The present study aimed to shed further light on this topic using 3D microscopic imaging.

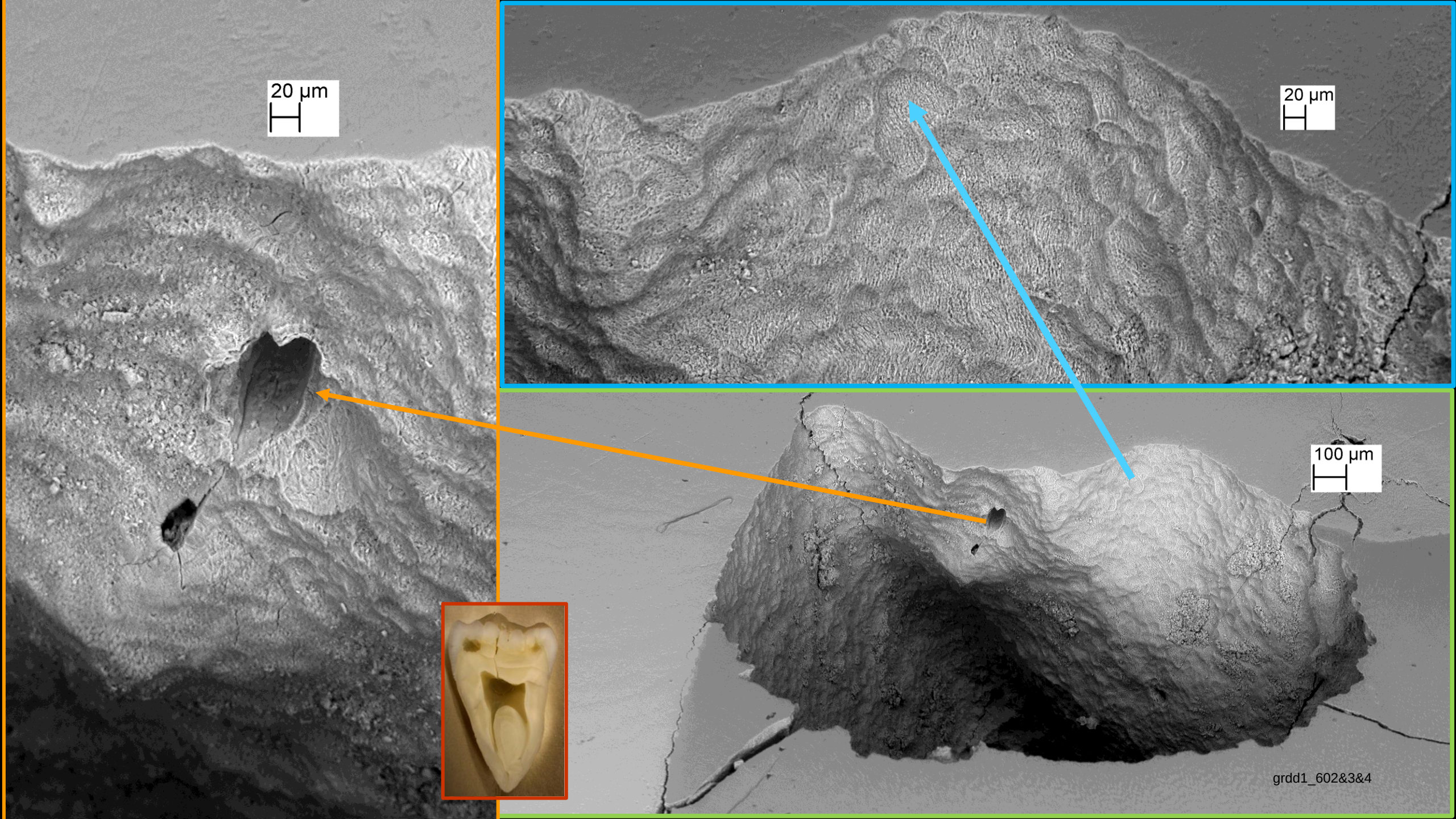
Apparently sound human third molars, collected with informed consent, fixed and stored in 70% ethanol, no records of identity or clinical histories.

High contrast resolution x-ray microtomography (XMT).

Teeth sectioned and cut surfaces polished.

SEM, Zeiss EVO MA10, 20kV backscattered electrons, uncoated, 50Pa chamber pressure.


20 µm
20 µm
100 µm
grd1_514


20 µm
20 µm
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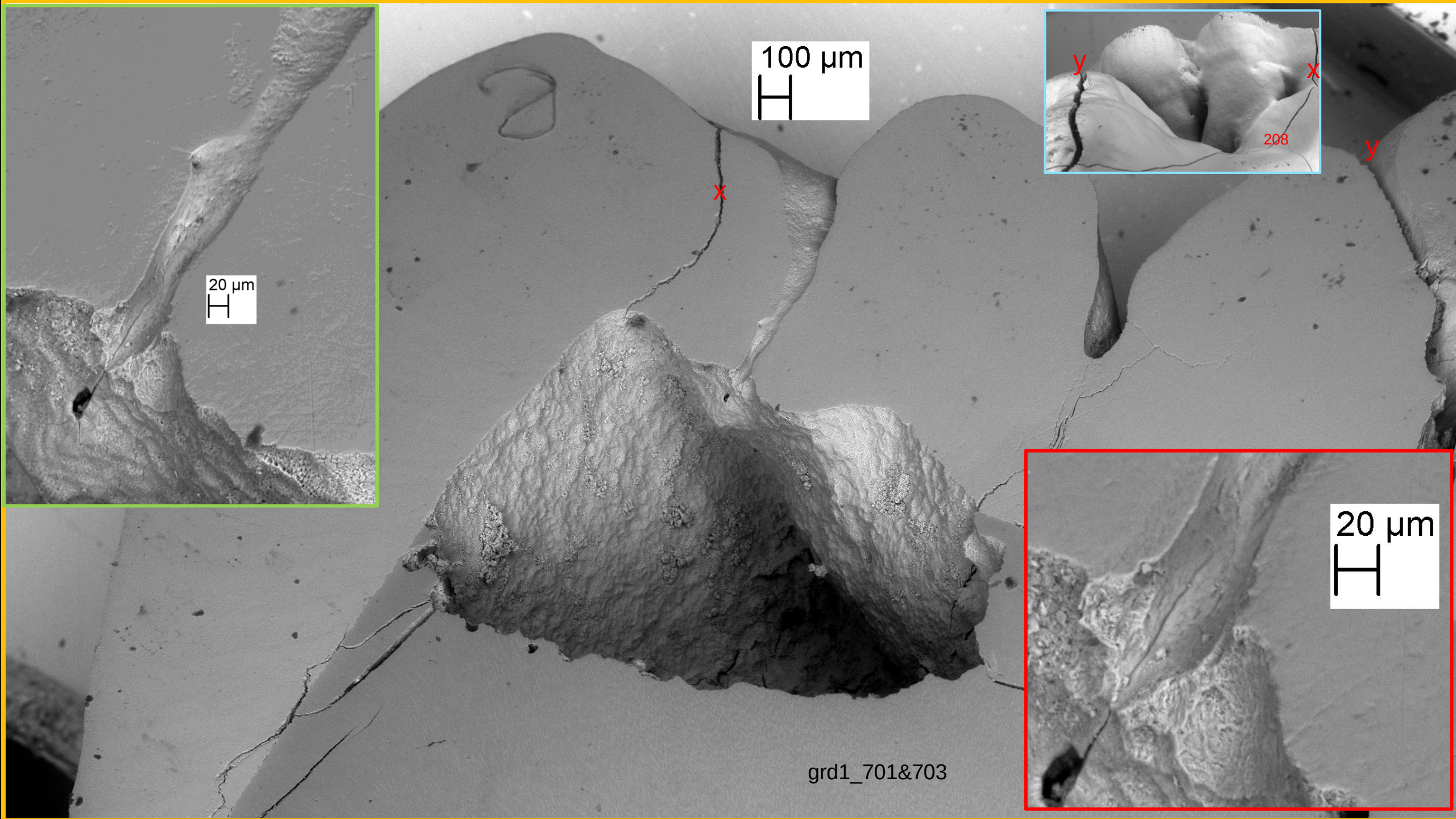
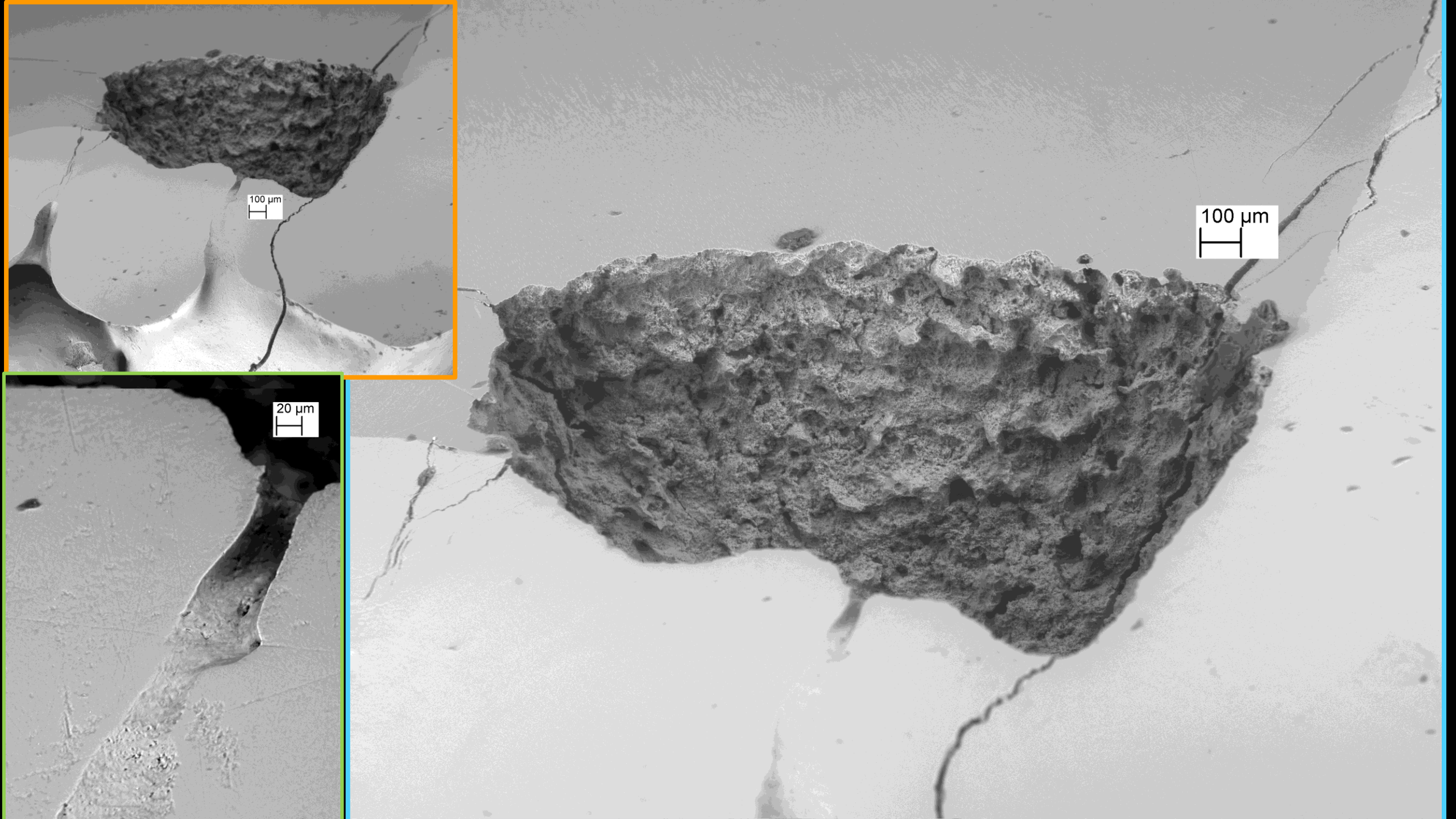
grdd1_602&3&4


100 µm
x
y
x
208
y
20 µm
20 µm
grd1_701&703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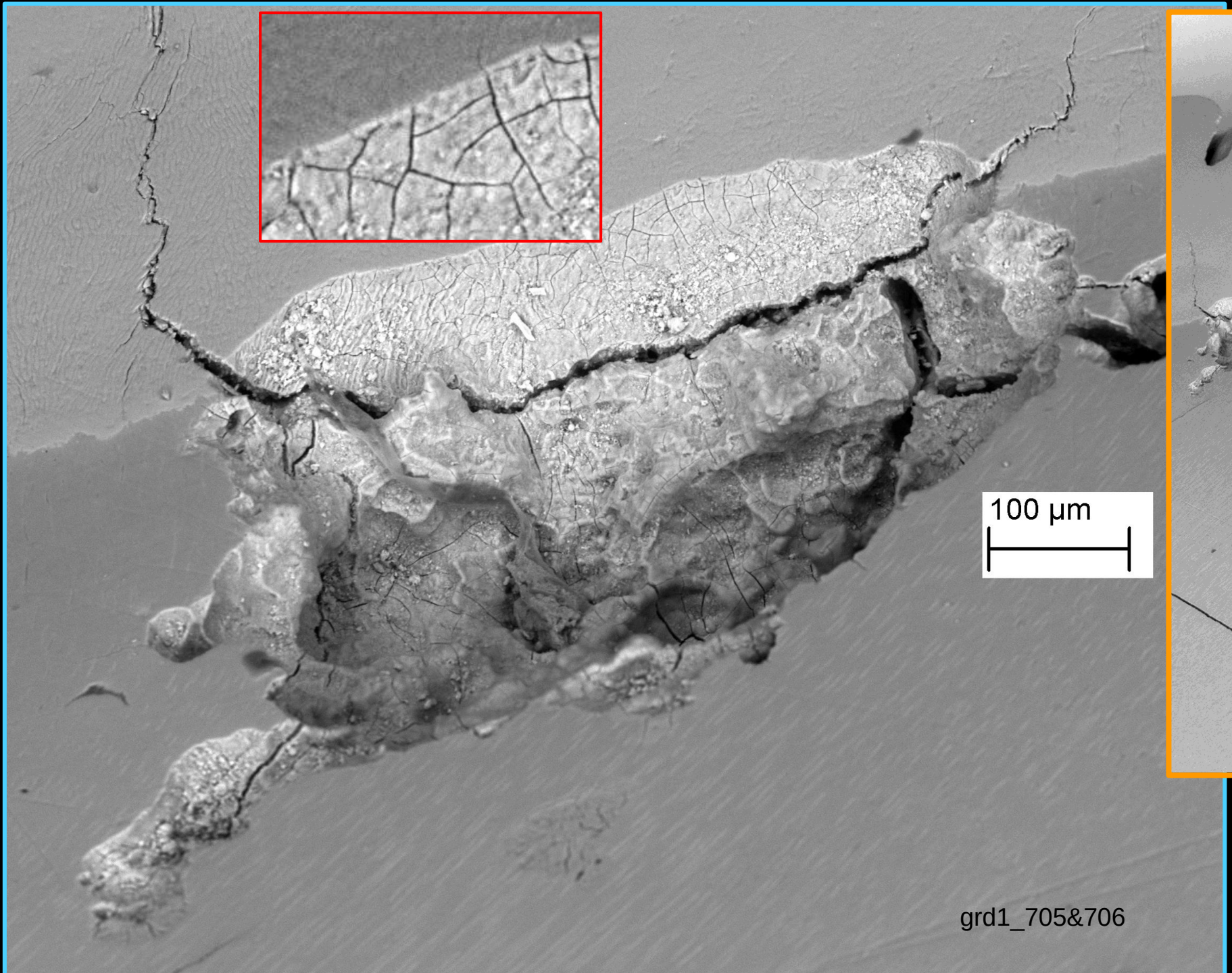
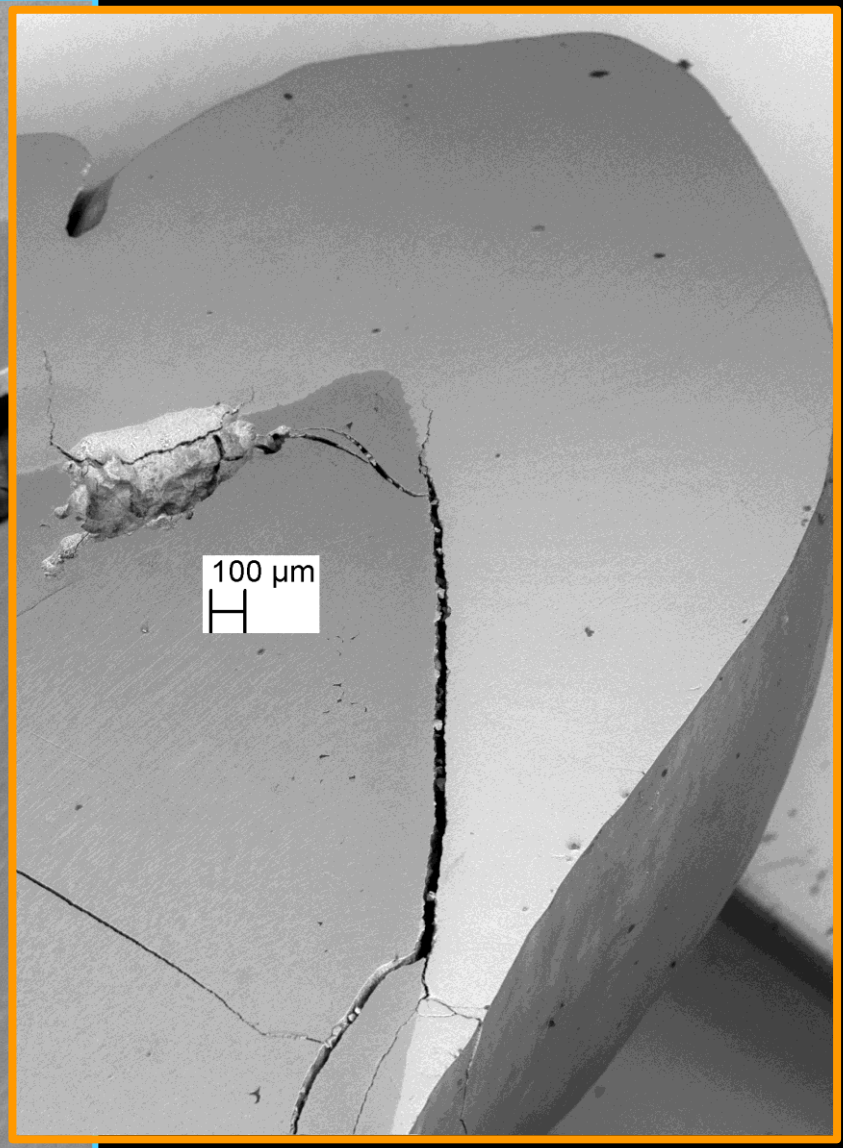
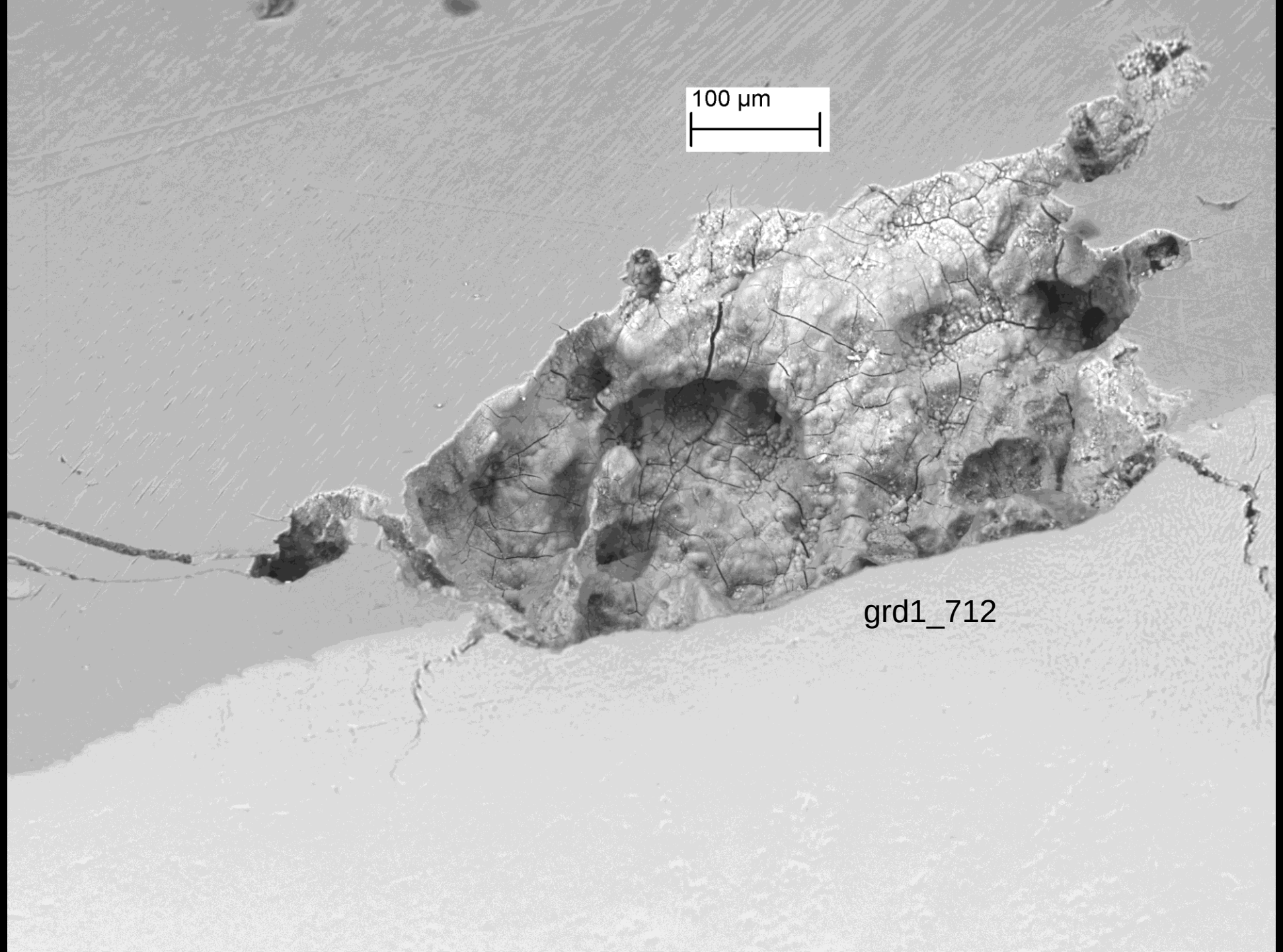
20 µm
100 µm





grd1_705&706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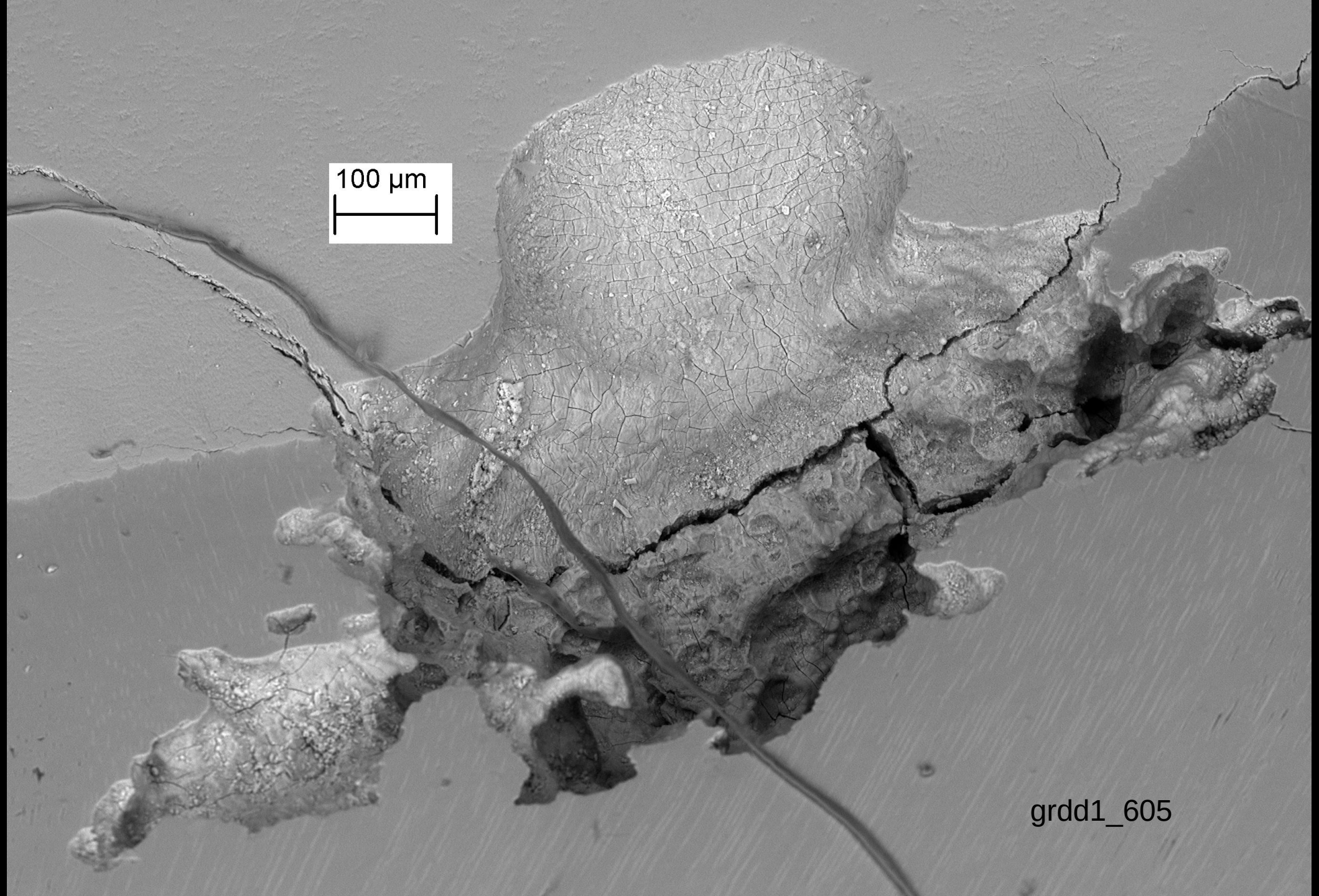
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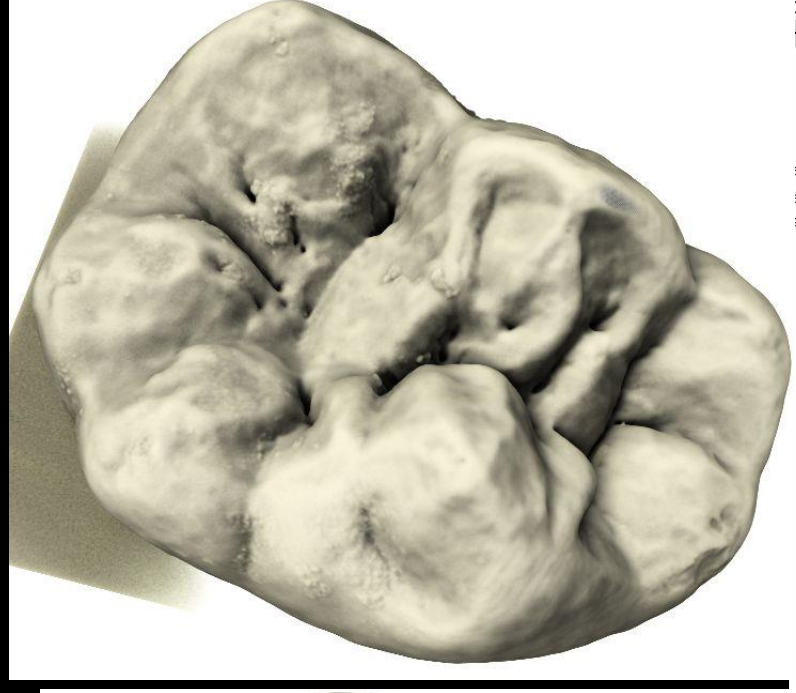

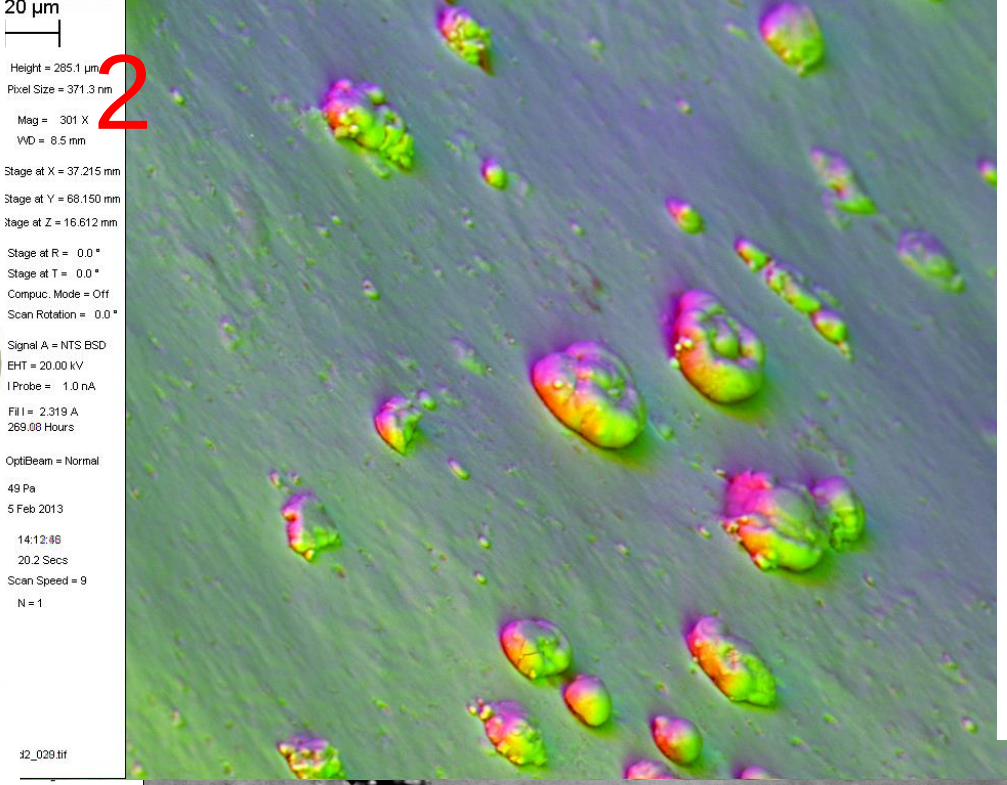
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Stage at Y = 68.150 mm
Stage at Z = 16.612 mm
Stage at R = 0.0 °
Stage at T = 0.0 °
Compuc. Mode = Off
Scan Rotation = 0.0 °
Signal A = NTS BSD
EHT = 20.00 kV
I Probe = 1.0 nA
Fil I = 2.319 A
269.08 Hours
OptiBeam = Normal
49 Pa
5 Feb 2013
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20.2 Secs
Scan Speed = 9
N = 1
2
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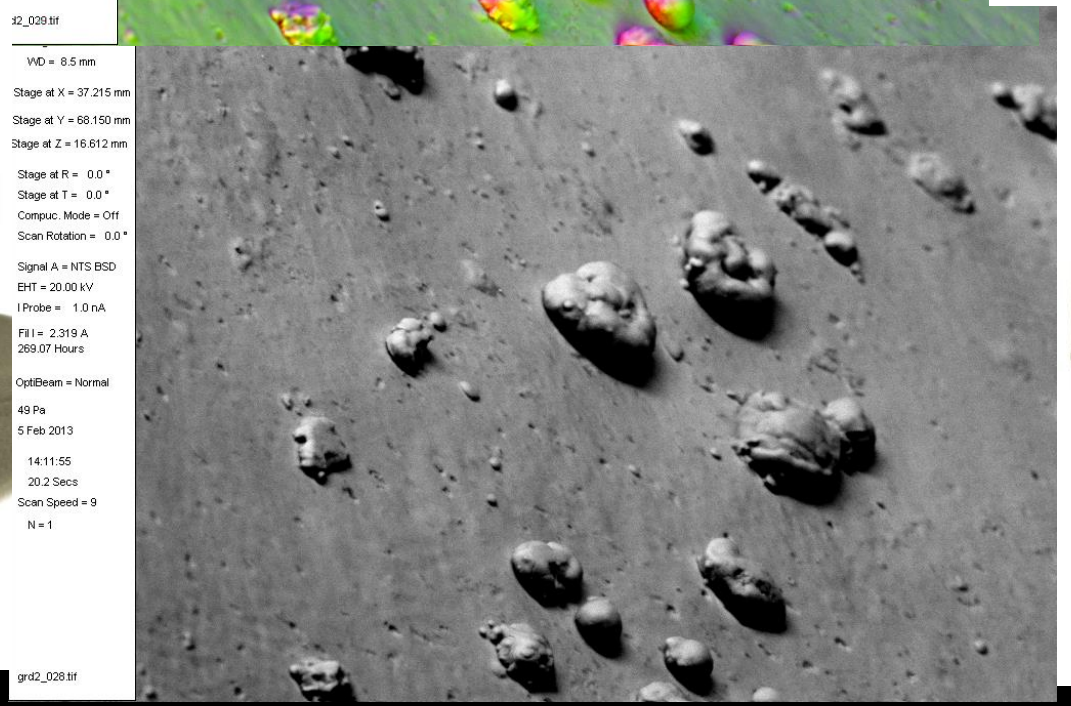
WD = 8.5 mm
Stage at X = 37.215 mm
Stage at Y = 68.150 mm
Stage at Z = 16.612 mm
Stage at R = 0.0 °
Stage at T = 0.0 °
Compuc. Mode = Off
Scan Rotation = 0.0 °
Signal A = NTS BSD
EHT = 20.00 kV
I Probe = 1.0 nA
Fil I = 2.319 A
269.07 Hours
OptiBeam = Normal
49 Pa
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20.2 Secs
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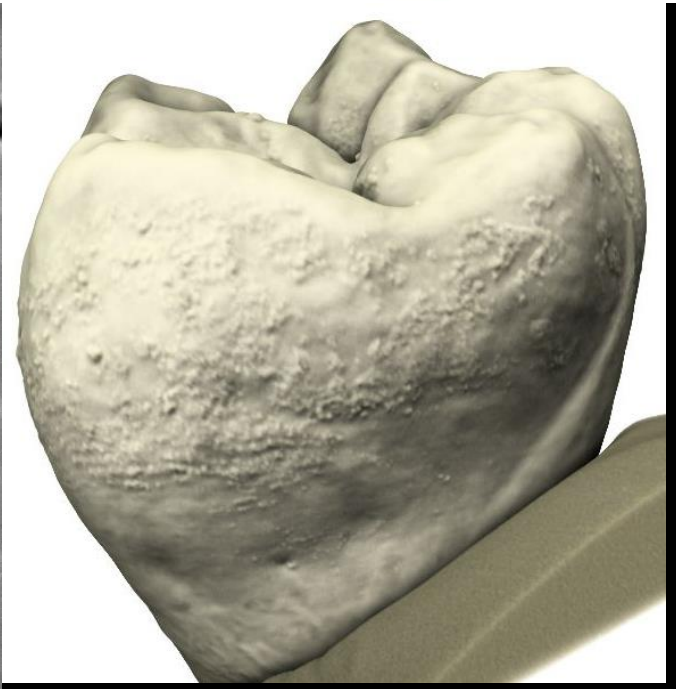
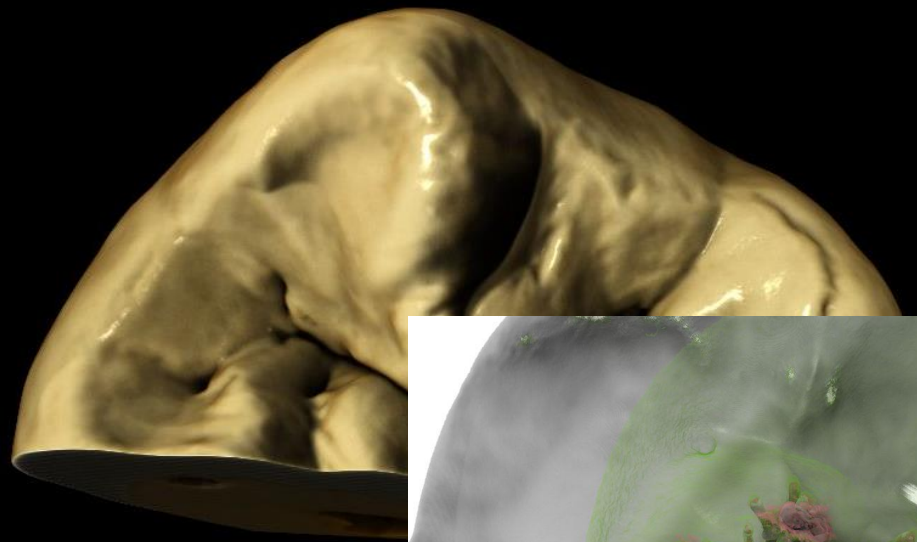
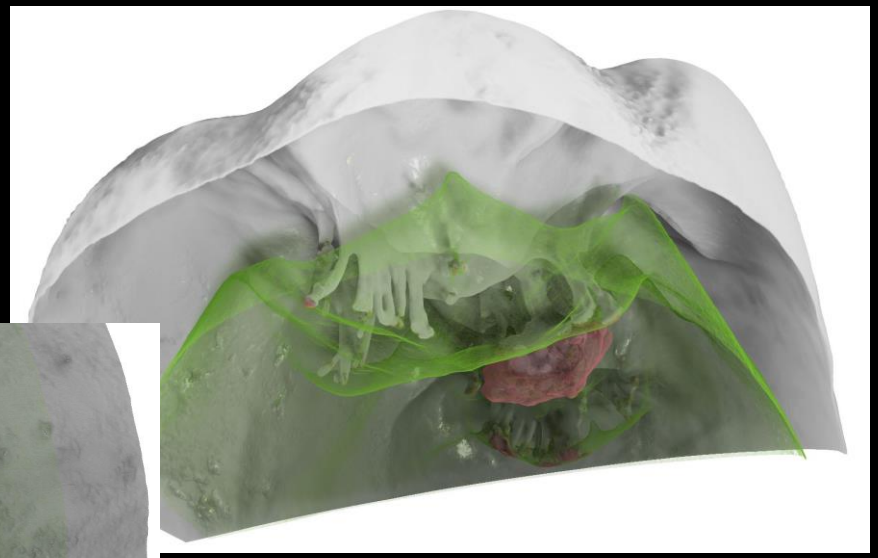
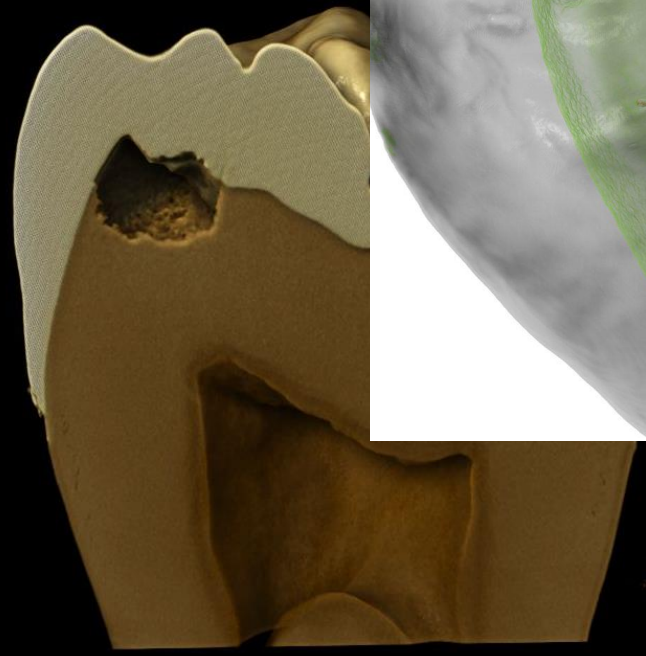
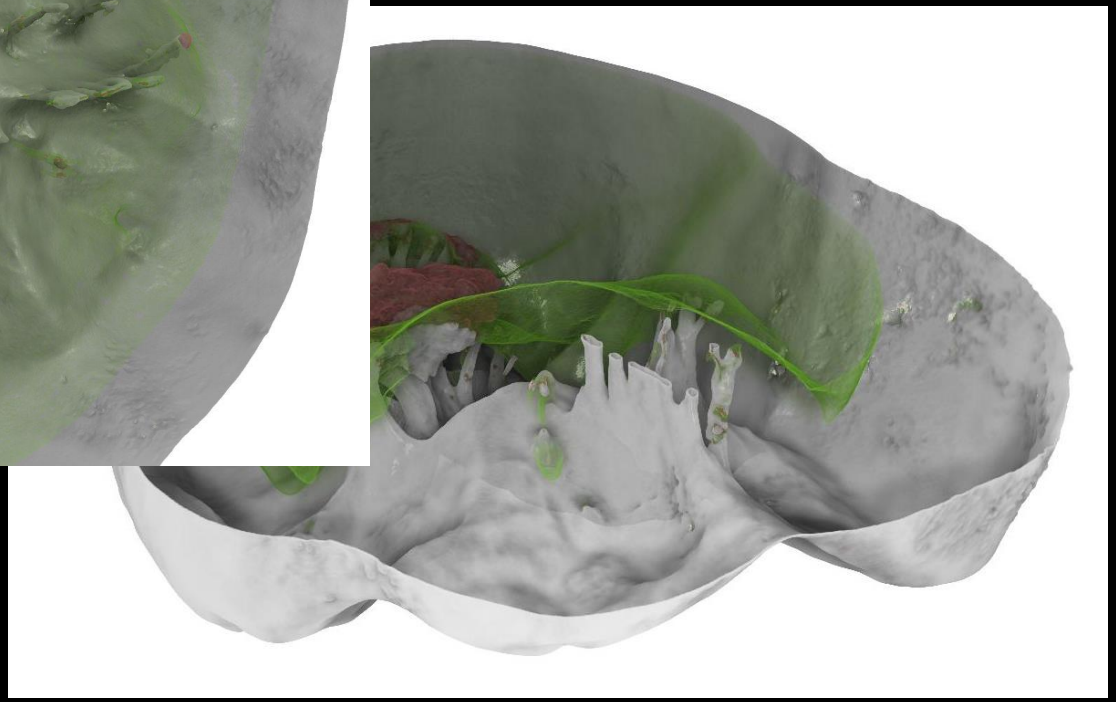
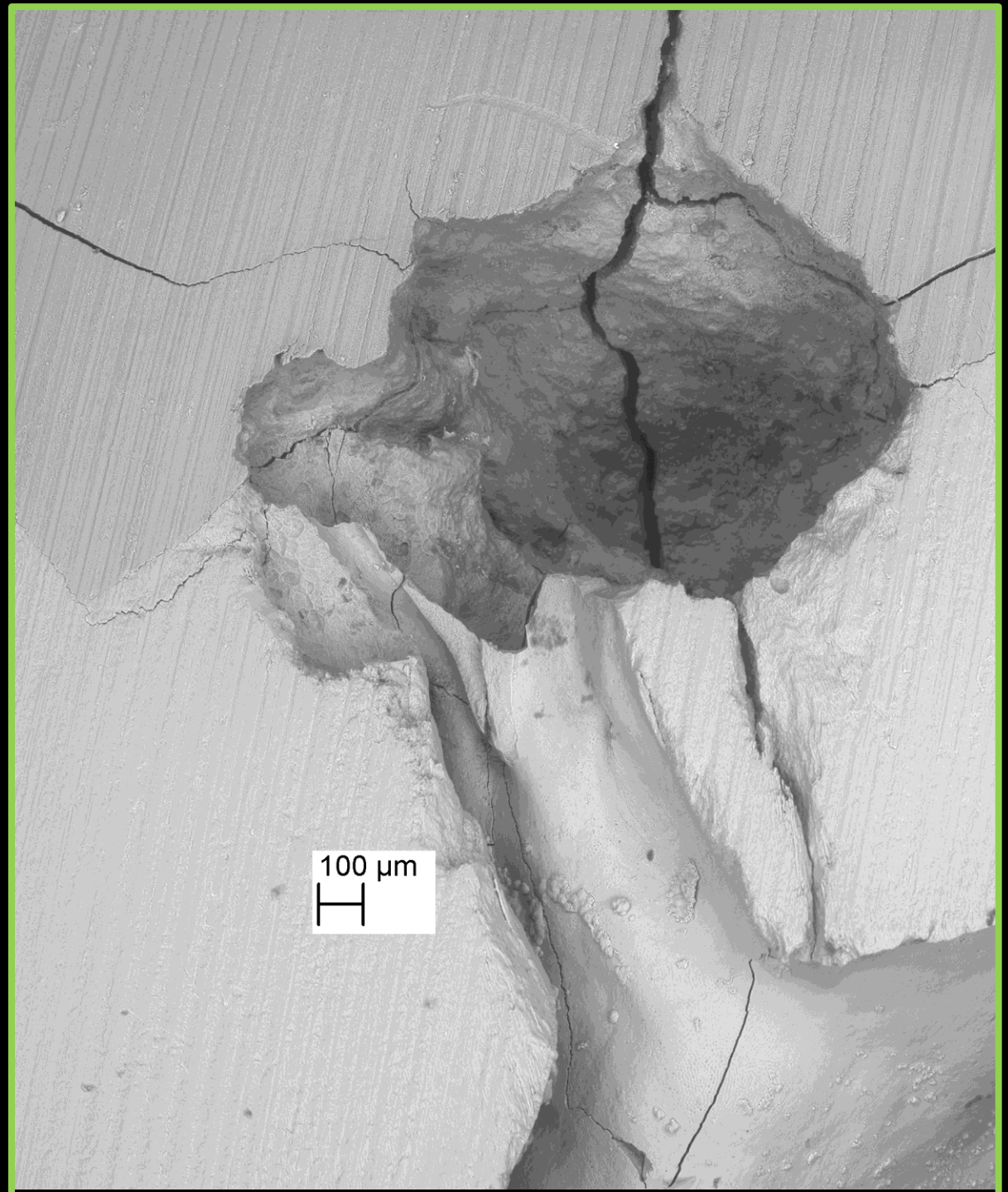


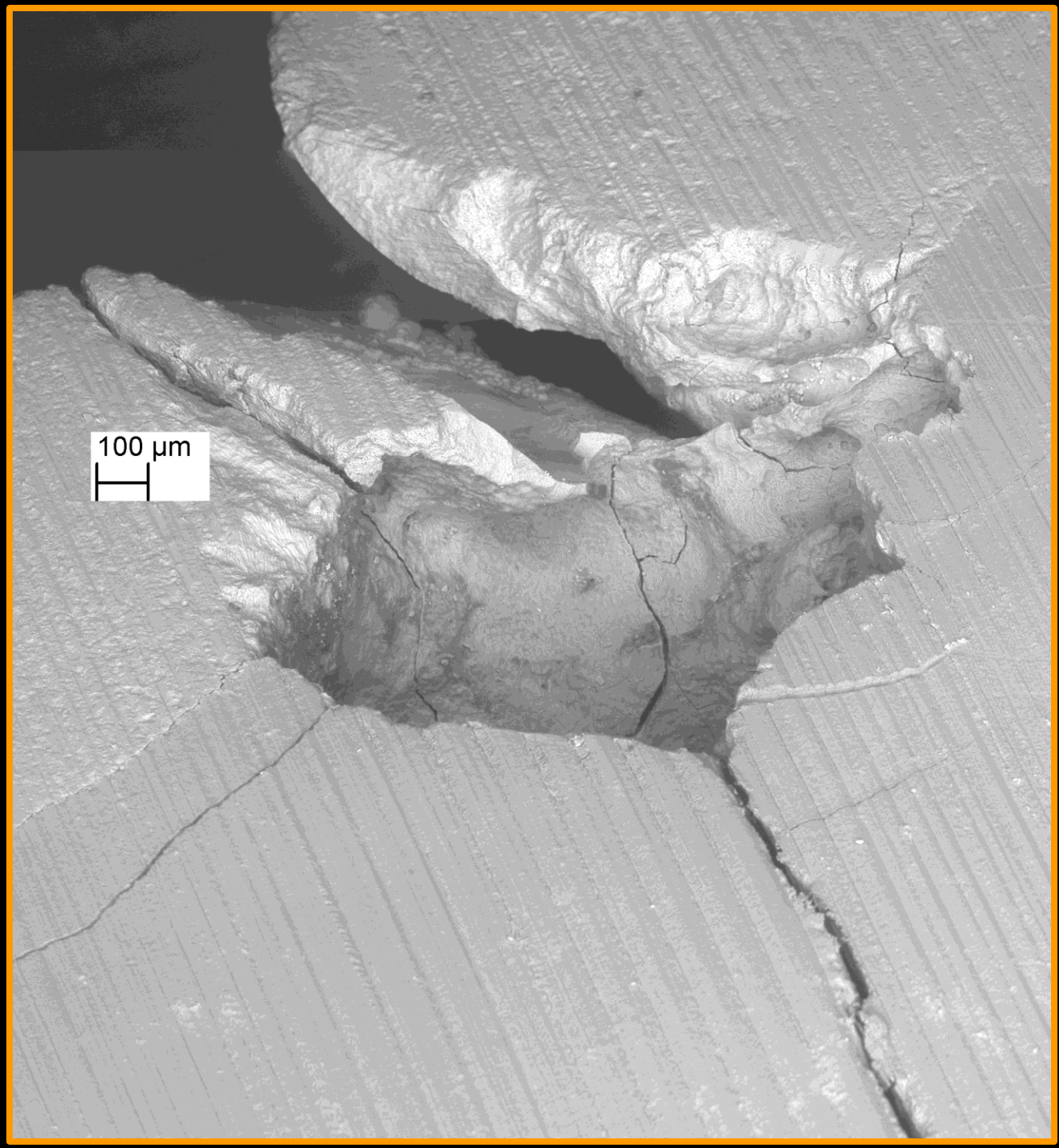


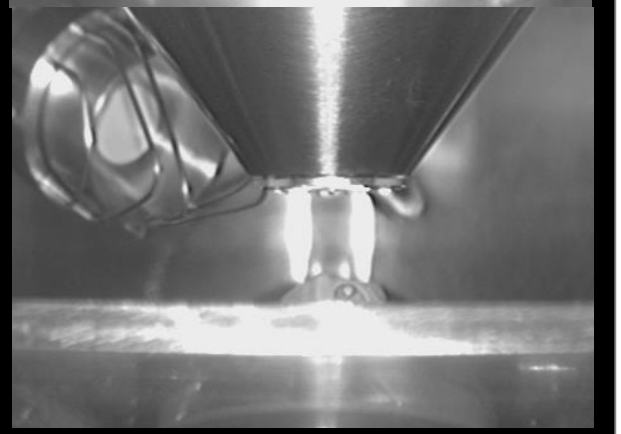


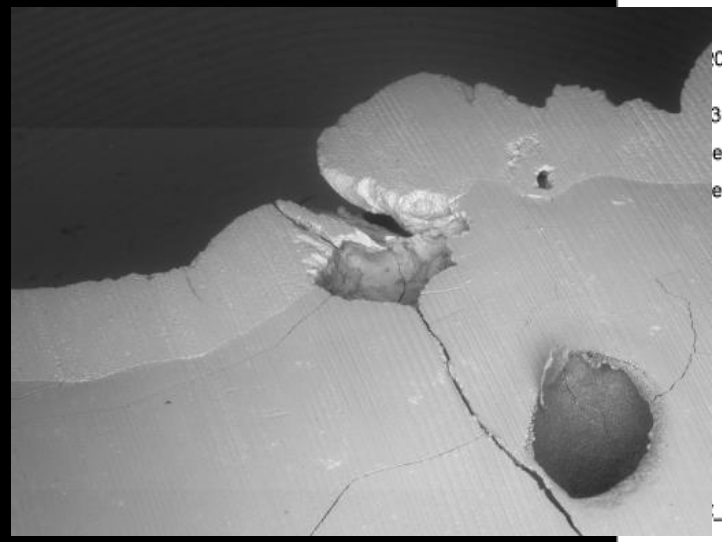





100 µm


100 µm





100 µm

Height = 2.199 mm

Pixel Size = 2.863 µm

Mag = 39 X

WD = 12.0 mm

Stage at X = 40.307 mm

Stage at Y = 48.081 mm

Stage at Z = 33.976 mm

Stage at R = 0.0 °

Stage at T = 6.0 °

Compuc. Mode = Tilt

Scan Rotation = 0.0 °

Signal A = NTS BSD

EHT = 20.00 kV

I Probe = 1.0 nA

Fil I = 2.319 A

278.60 Hours

OptiBeam = Normal

2013

31

ecs

eed = 7

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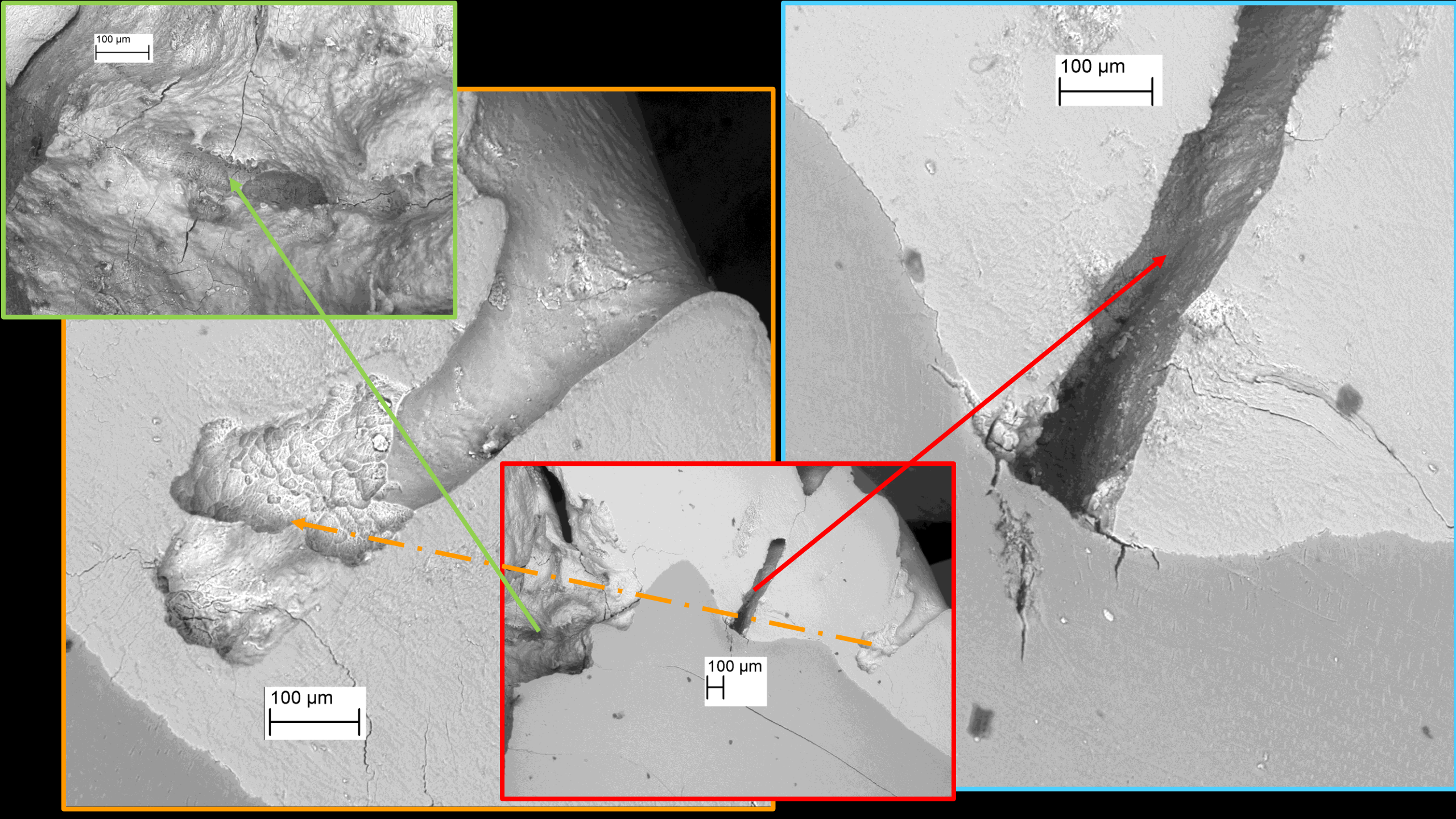
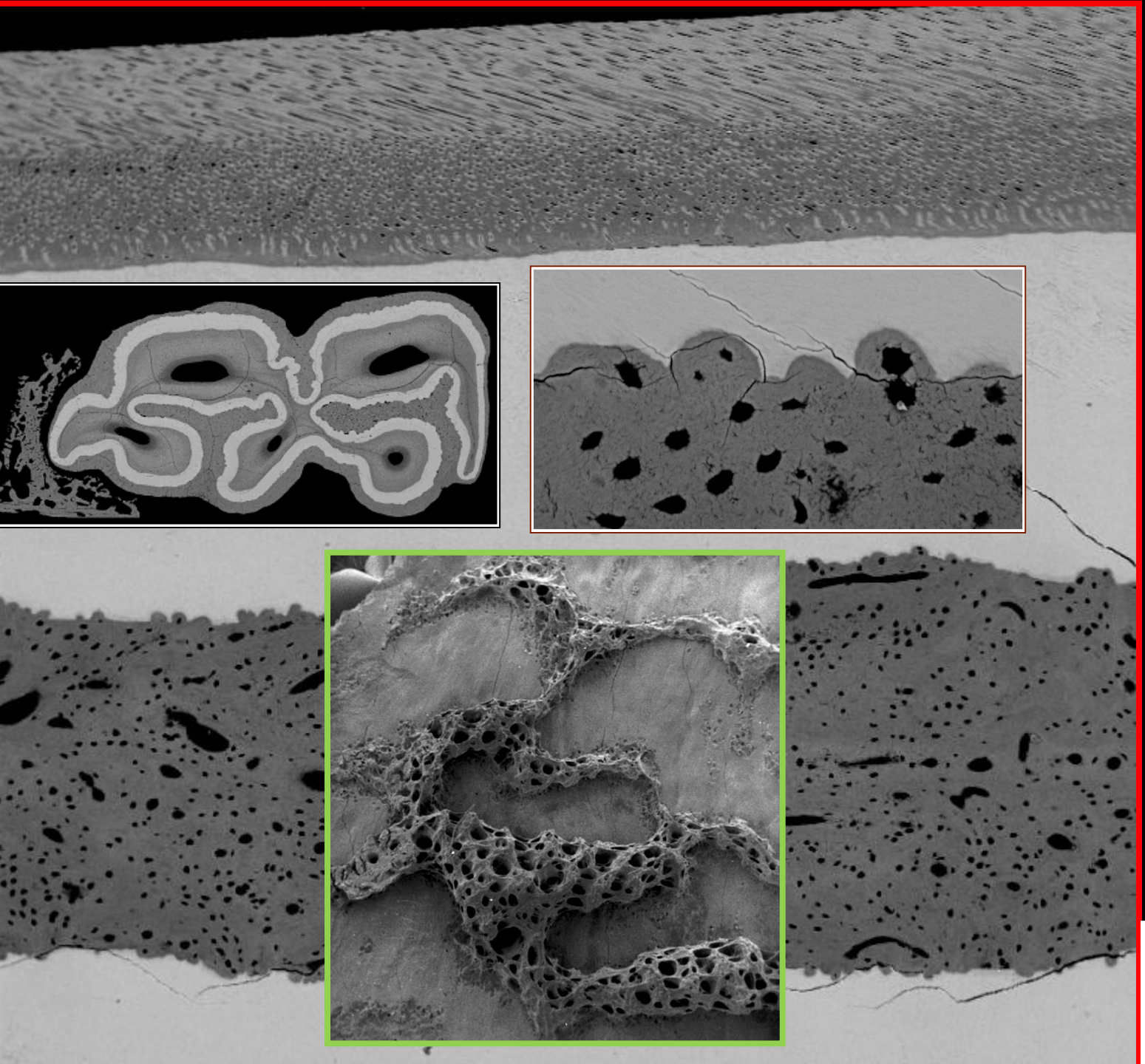
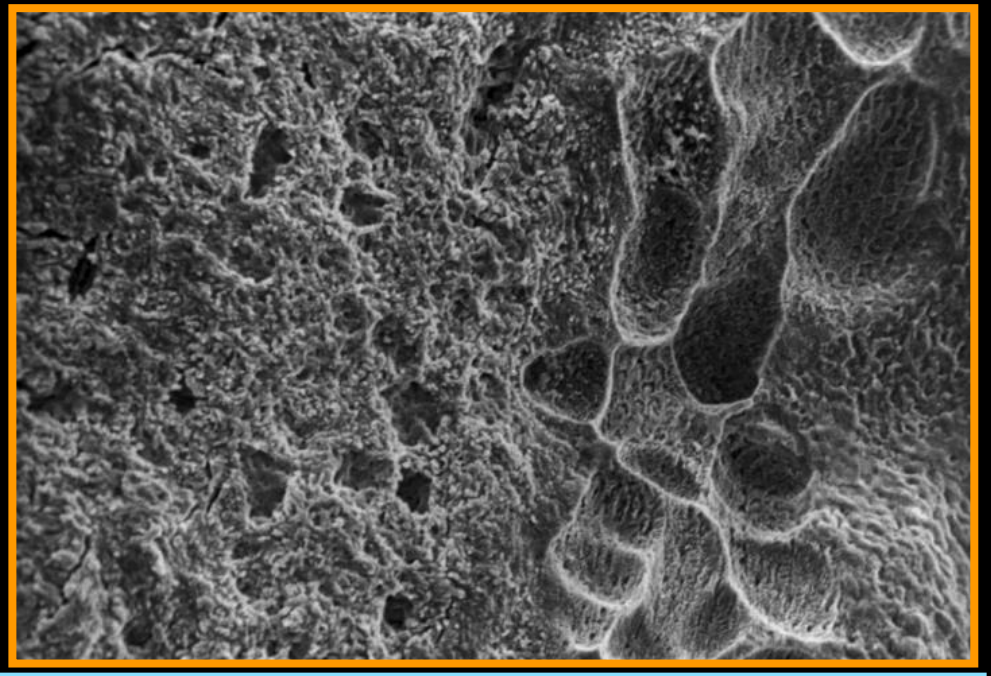
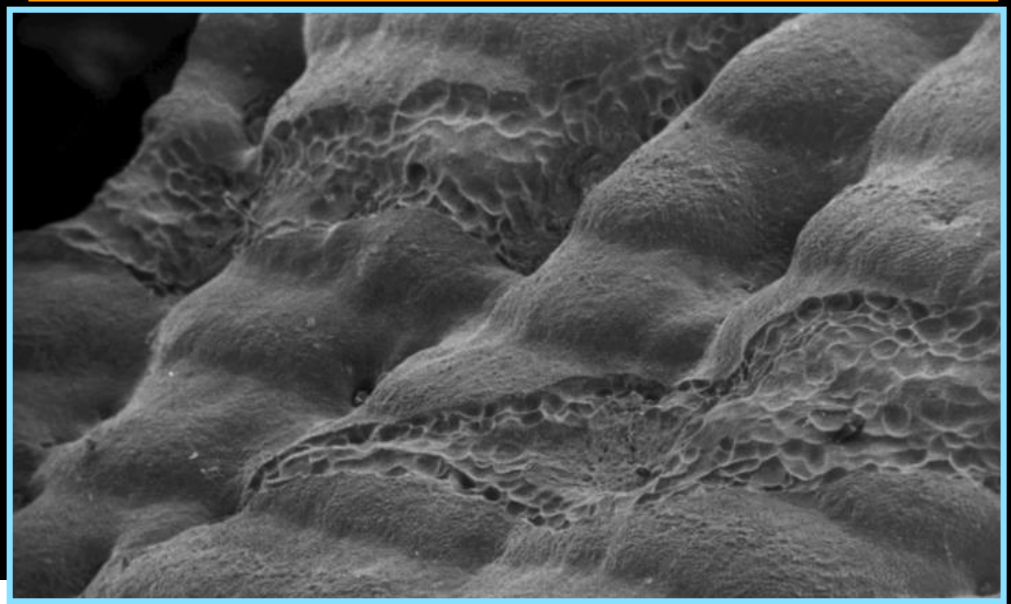

100 µm
100 µm
100 µm
100 µm







Horse

enamel resorption to attach coronal cementum

Results and Conclusions and Thanks

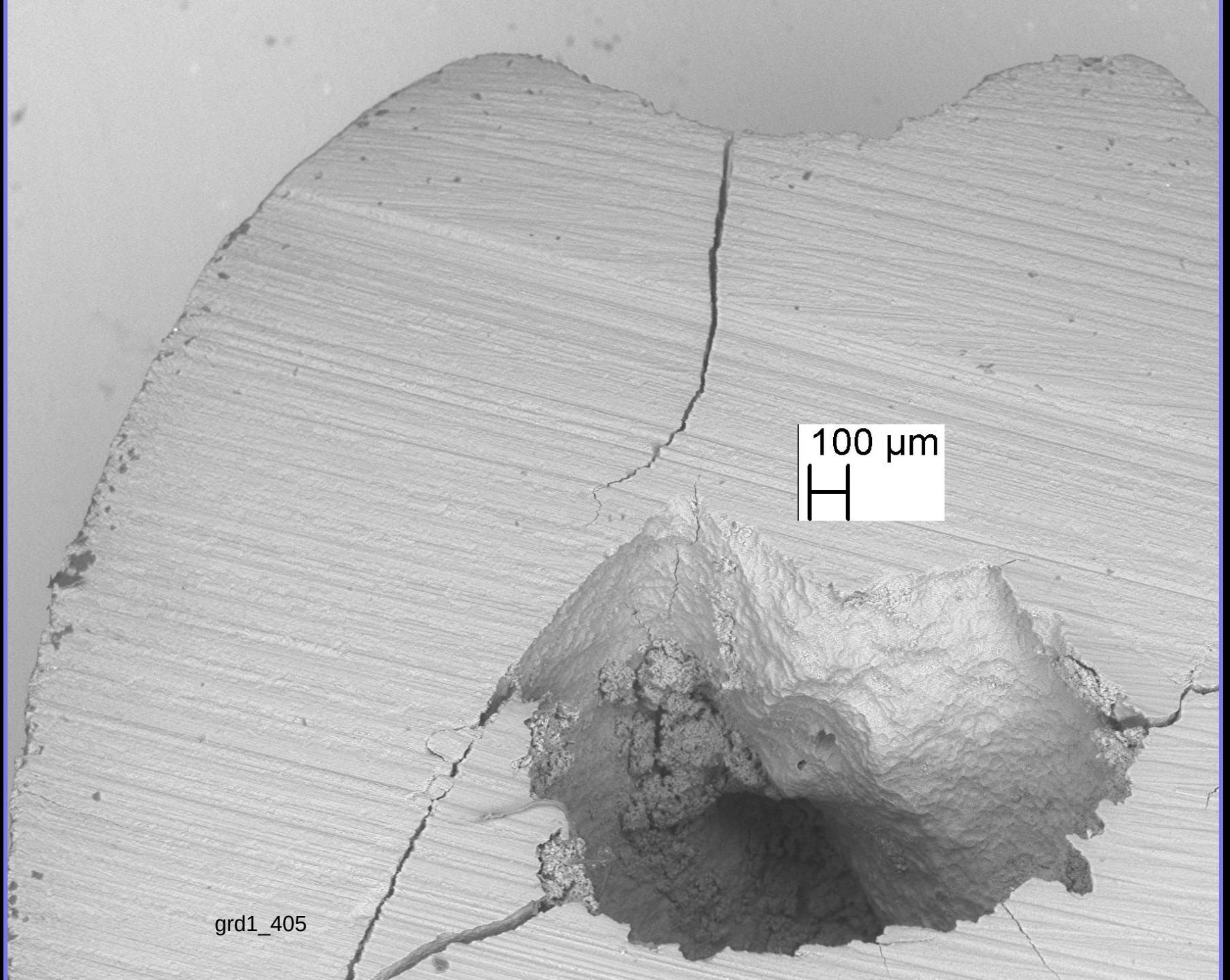
XMT and SEM showed empty intracoronal resorption cavities close to the occlusal EDJ, with no discolouration of the adjacent dentine or enamel.

These excavations were at the end of long tunnels connecting to the fissure system of the occlusal surface.

The detail of resorbed surfaces of both enamel and dentine bear the characteristic osteoclastic imprint.

These intra-coronal cavities arise by osteoclastic excavation starting within enamel fissures in a pre-eruptive period extended by delayed eruption caused by impaction.

Primary acellular cementum may be deposited on resorbed surfaces of both dentine and enamel.


100 µm
grd1_405