

Supplementary data

Table 2. Chemical composition (wt.%) of STRYDE based on PMI analysis

Element	Fe	Cr	Mn	Mo
Housing body	53	22.0	24.0	0.7
Distraction rod	53	22.0	23.9	0.7
Bushing	54	22.5	23.2	0.7
Screw	53	22.1	23.7	0.7
Biodur 108 (ASTM F2229-21)		19–23	21–24	0.5–1.5



Figure 1. Photos of nail junctions taken by surgeons. Order: time of implantation from 107 days (top left) to 609 days (bottom right).

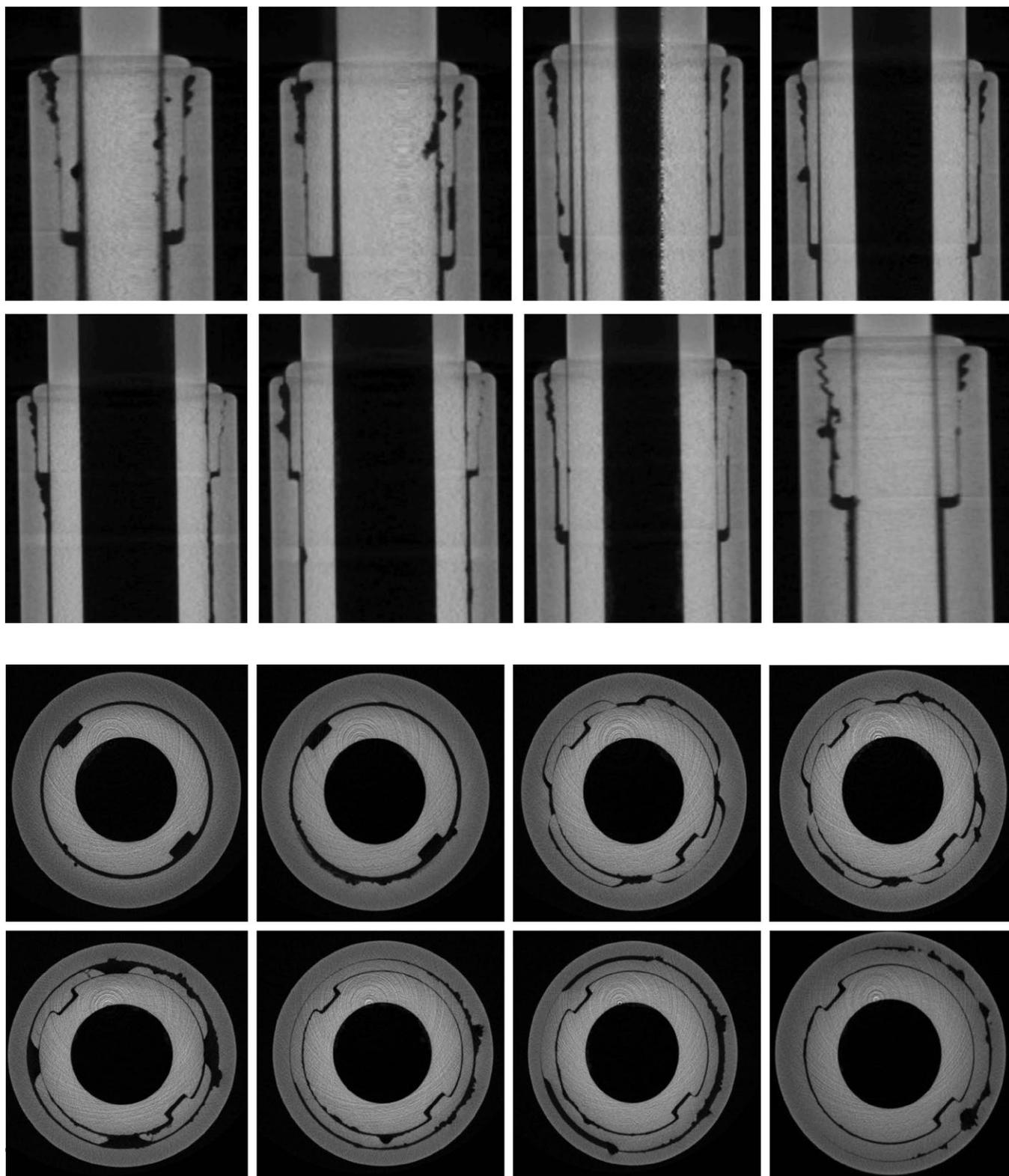


Figure 2. Micro-CT: Example of 1 corrosion-attacked bushing, vertical and axial slices.

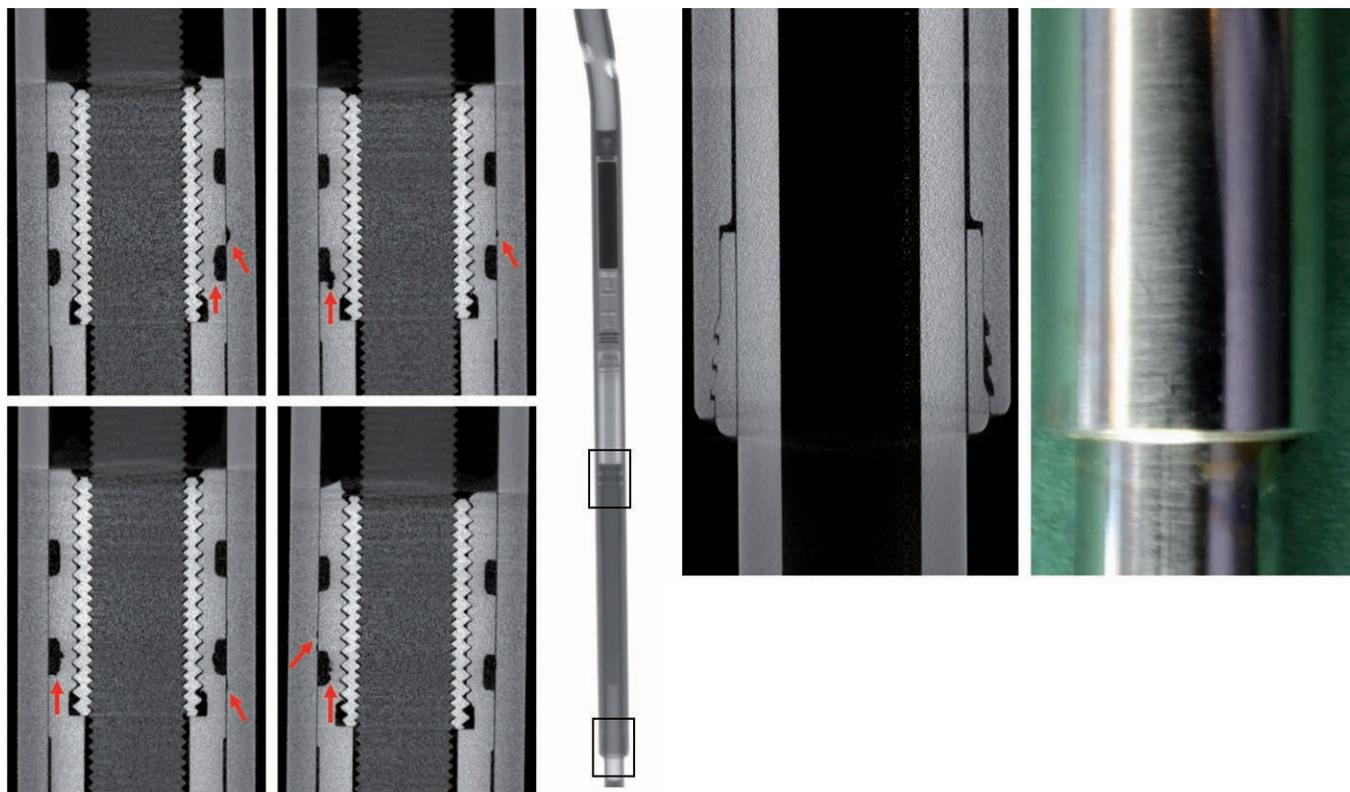
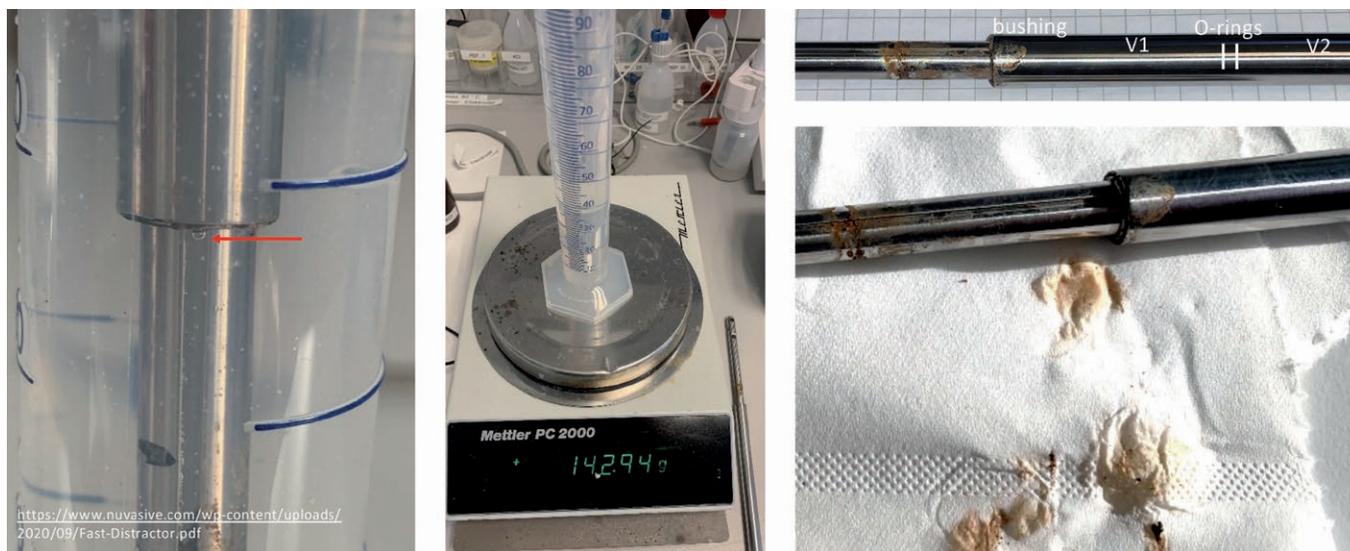


Figure 3. Micro-CT: Corrosion at the level of the O-ring (red arrows) without severe corrosion at the bushing. Sectioning revealed an intact O-ring but crevice corrosion attack.

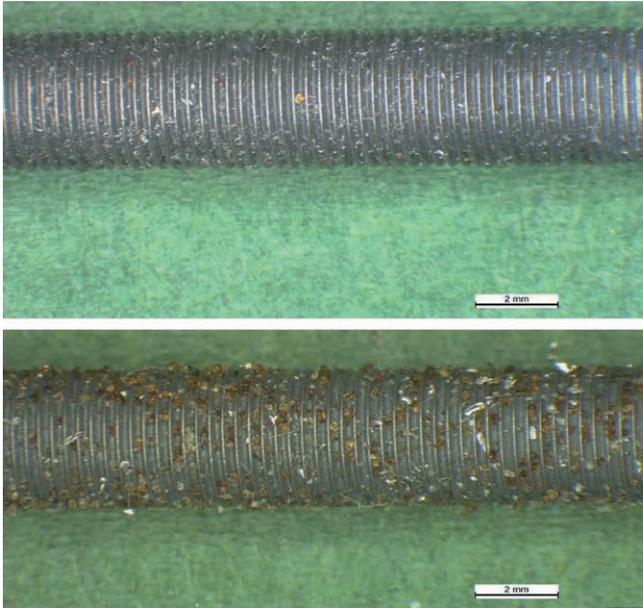


17 mm distraction of a STRYDE nail with the "fast distractor" submerged in saline water. Air bubbles emerge (red arrow).

17 mm retraction with the "fast distractor" submerged in saline water. No air bubbles are seen and the weight is measured.

Subsequently, the nail was dried and distracted again. Brown fluid leaked from the nail.

Figure 5. Distraction–retraction–distraction experiment: brown fluid leaking from the junction.



PMI analysis

	V%	Cr%	Mn%	Fe%	Cu%	Mo%	W%	Al%	Ti%	Si%	Ni%
Sample 1	4.10	2.05	1.76	2.63	0.47			16.0	72.1	0.79	0.03
Sample 2	4.20	3.27	3.00	5.69	0.16			1.2	81.8	0.62	0.05

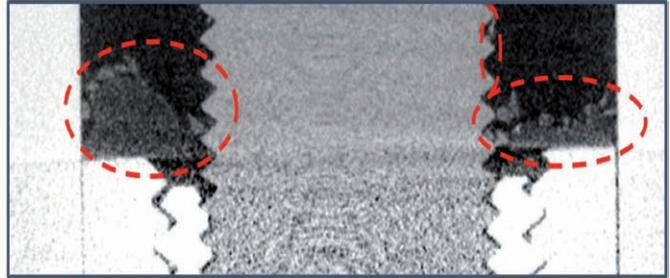


Figure 7. Dry lubricant (brown crystalline structure) on internal titanium rod (left panels). Micro-CT (right panel) showing debris of dry lubricant (red marks).

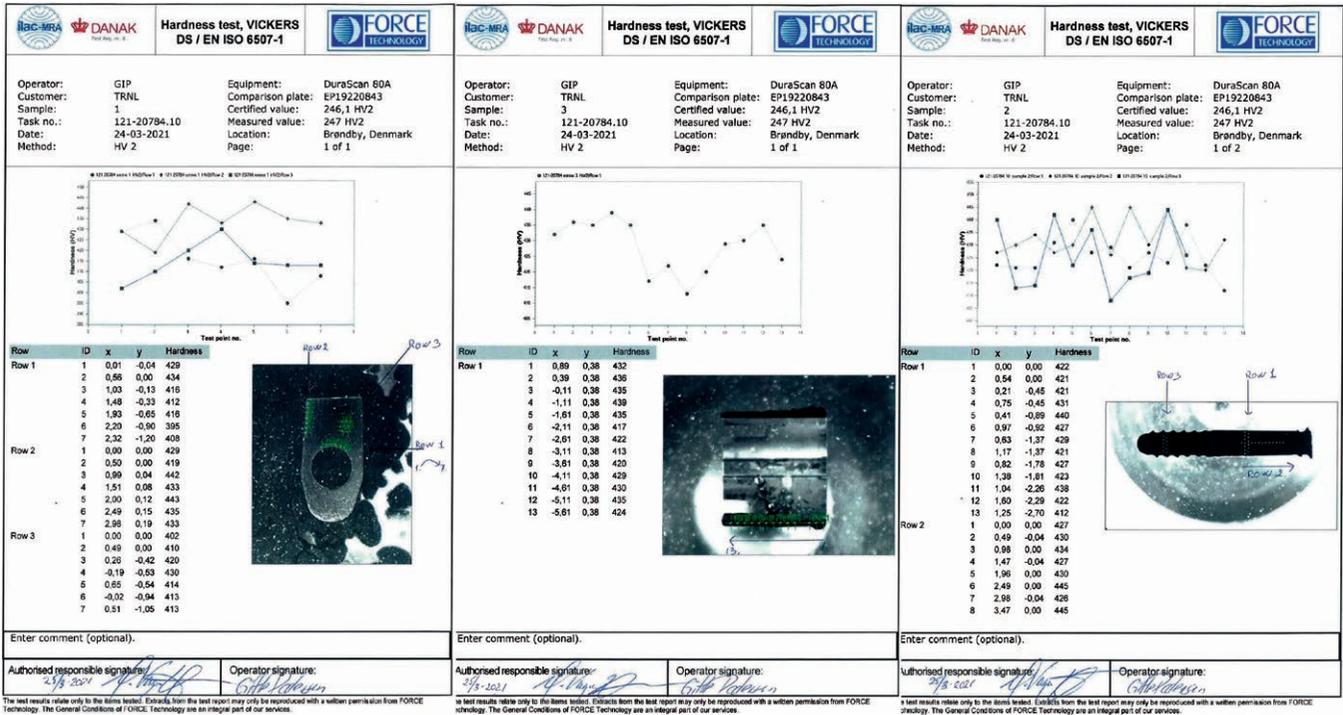


Figure 11. Hardness analysis of the nail and locking screws.

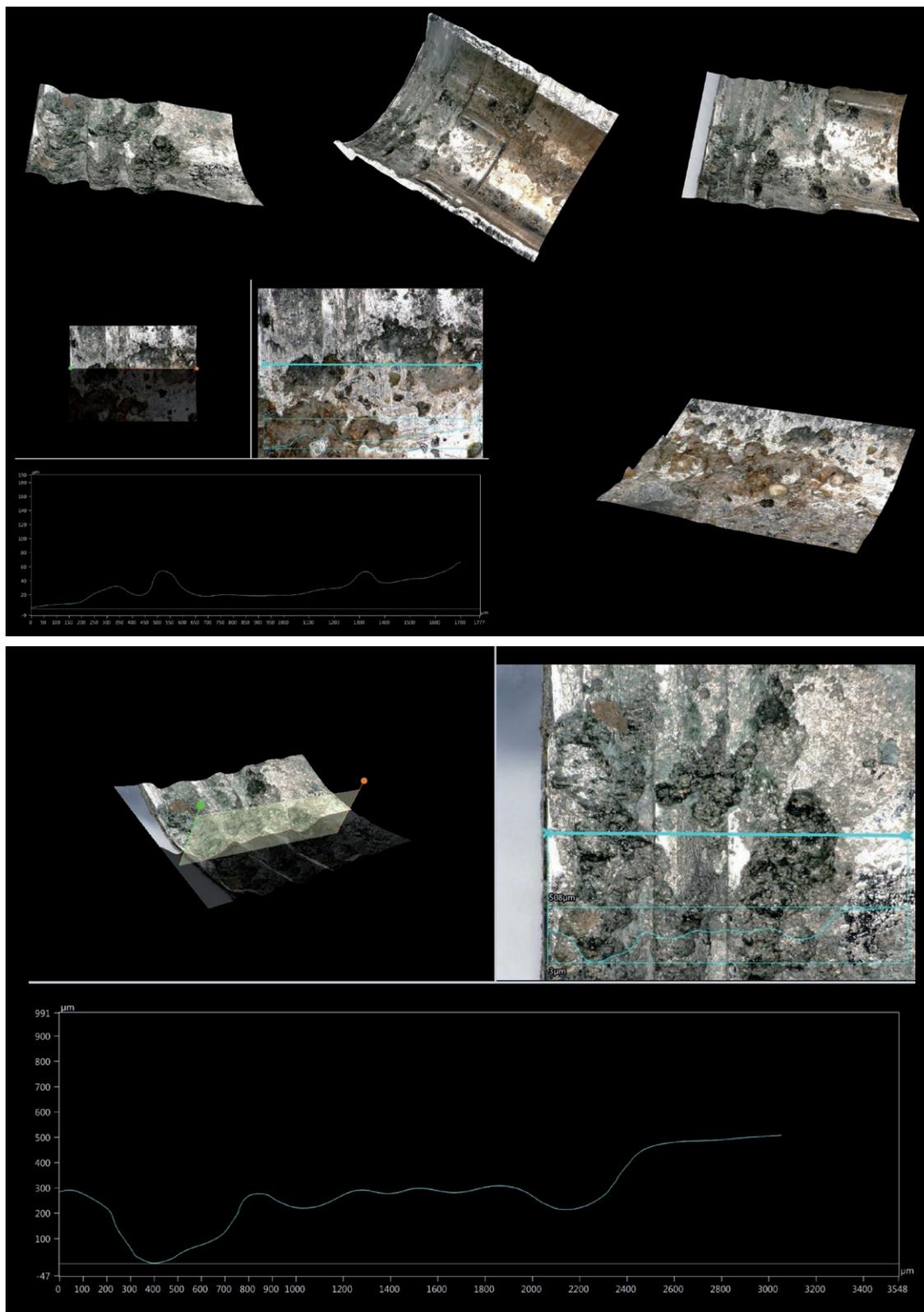


Figure 12. Digital microscopy—example of 1 sectioned bushing.

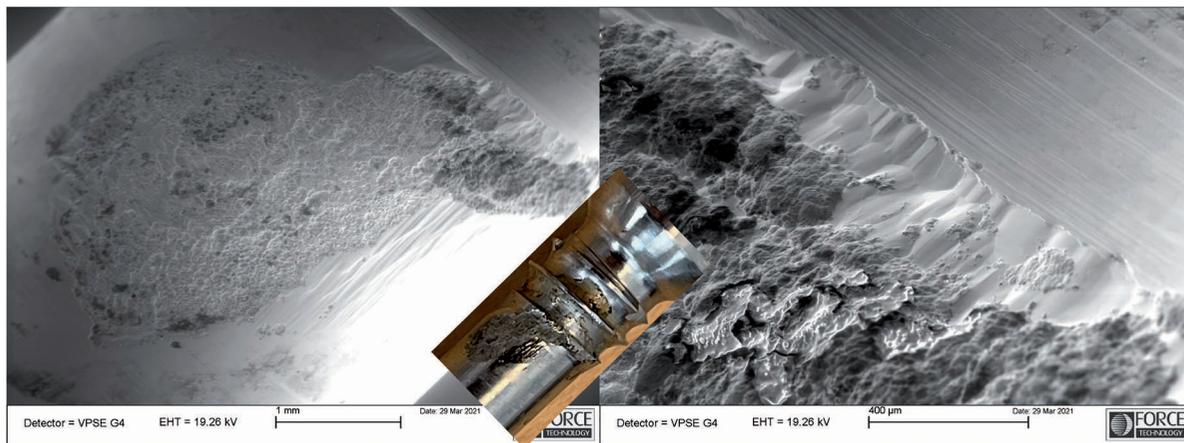


Figure 13. SEM: mechanically assisted crevice corrosion of a screw.