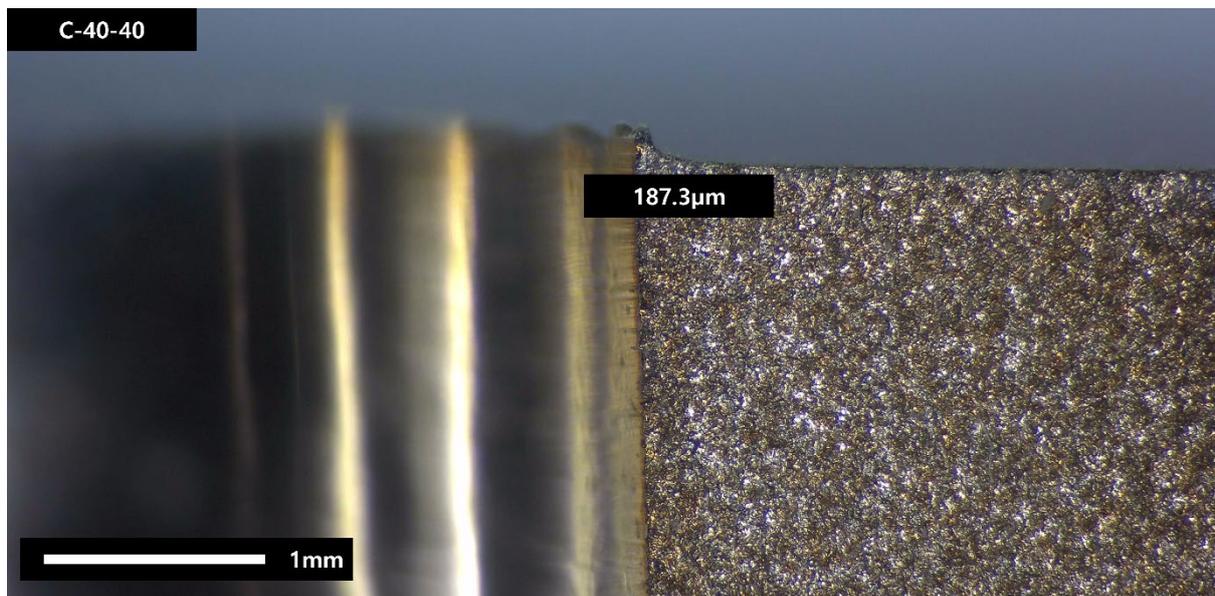


Supplementary Data

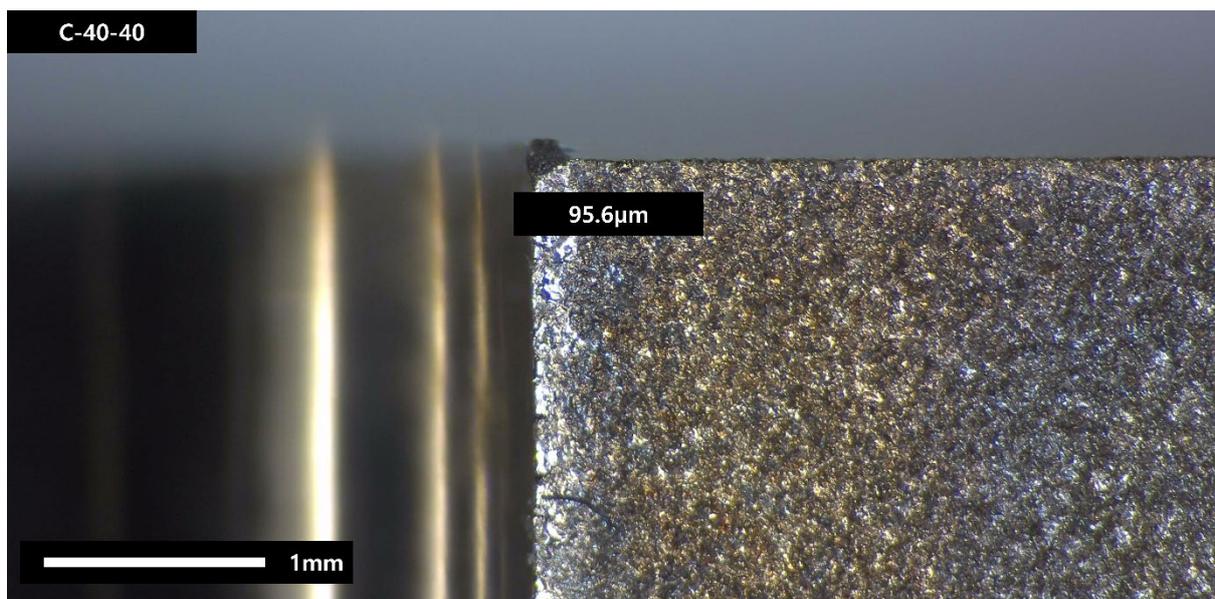
1. Burr Height

Figure S1. OM (Optical Microscope) images displaying burrs after drilling processing. (a; C-40-40 sample #1, b; C-40-40 sample #2, c; C-80-40 sample #1, d; C-80-40 sample #2, e; C-120-40 sample #1, f; C-120-40 sample #2, g; L-40-40 sample #1, h; L-40-40 sample #2, i; L-80-40 sample #1, j; L-80-40 sample #2, k; L-120-40 sample #1, and l; L-120-40 sample #2)

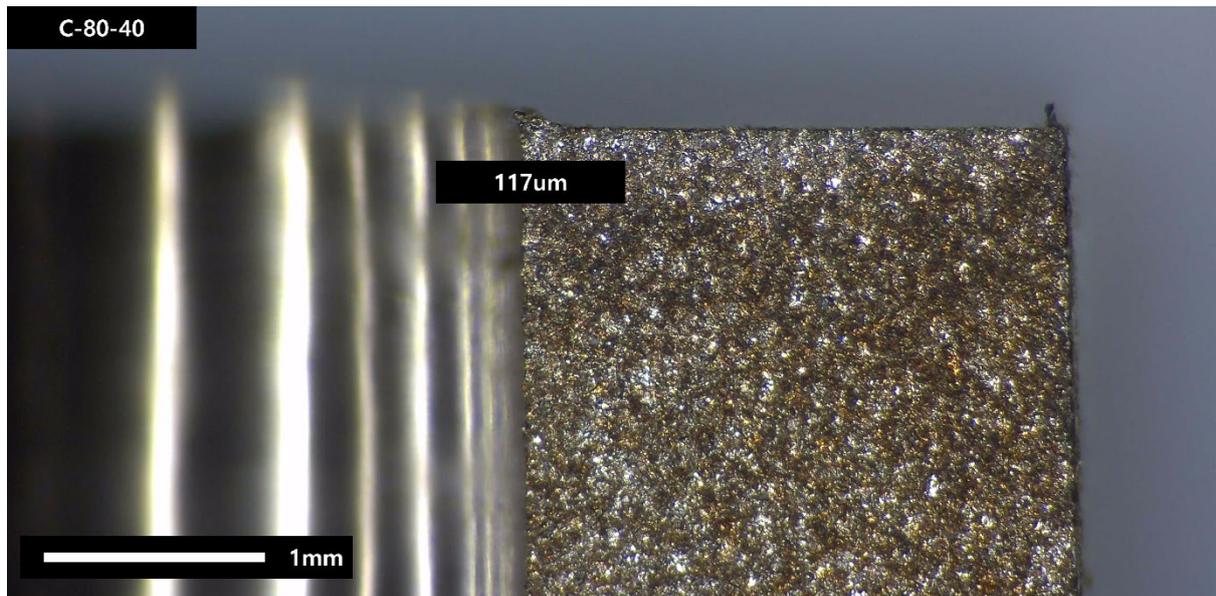
a)



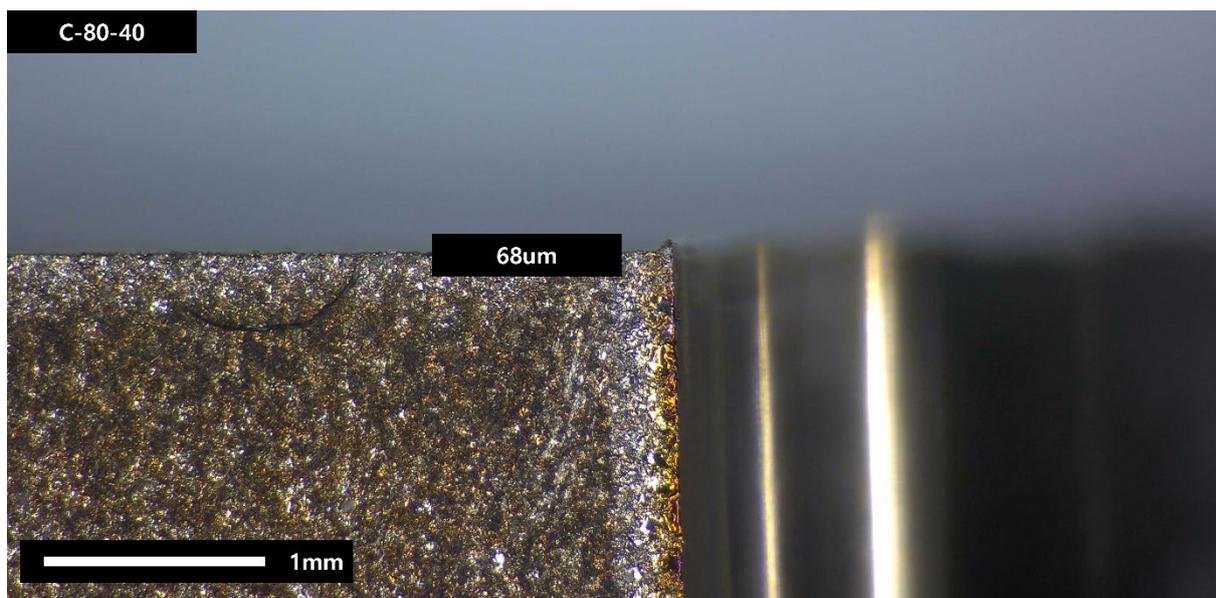
b)



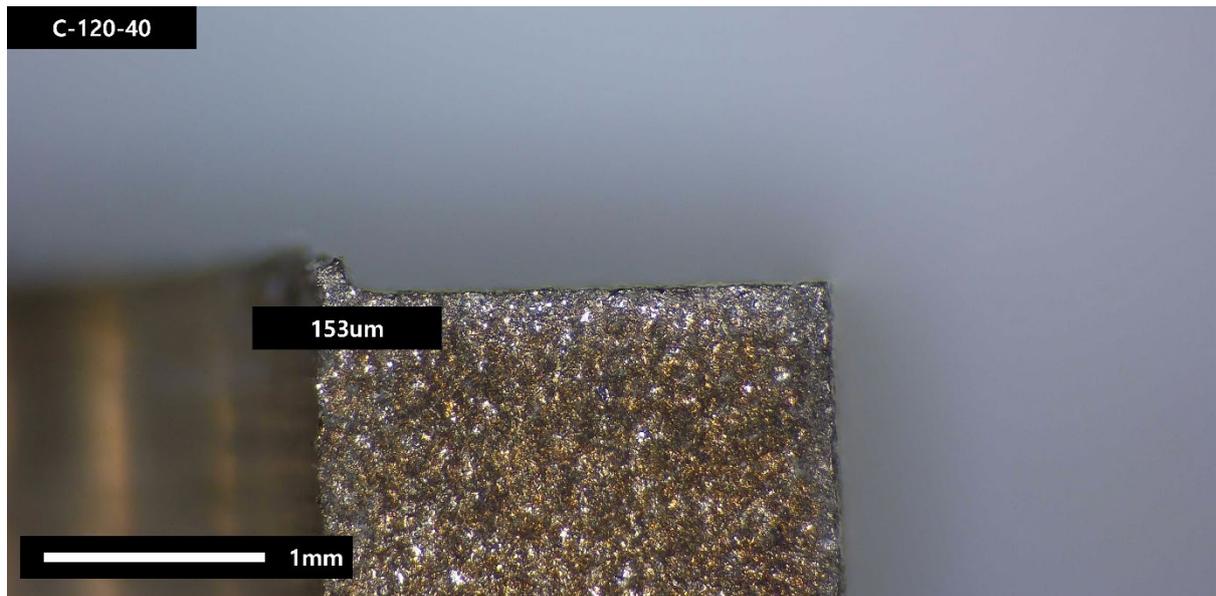
c)



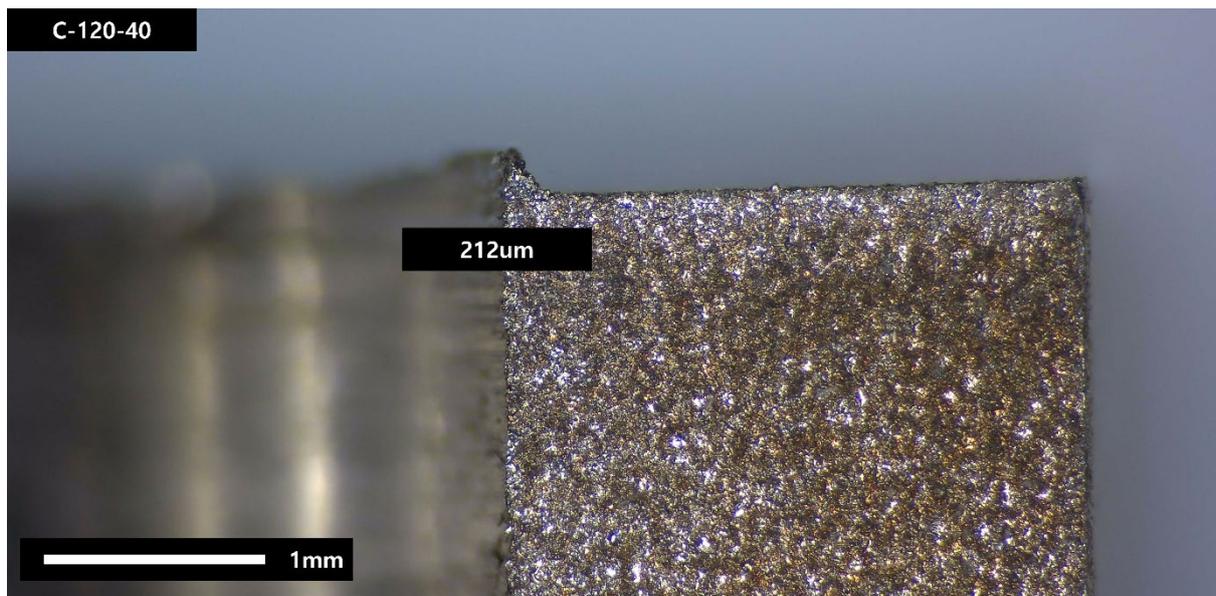
d)



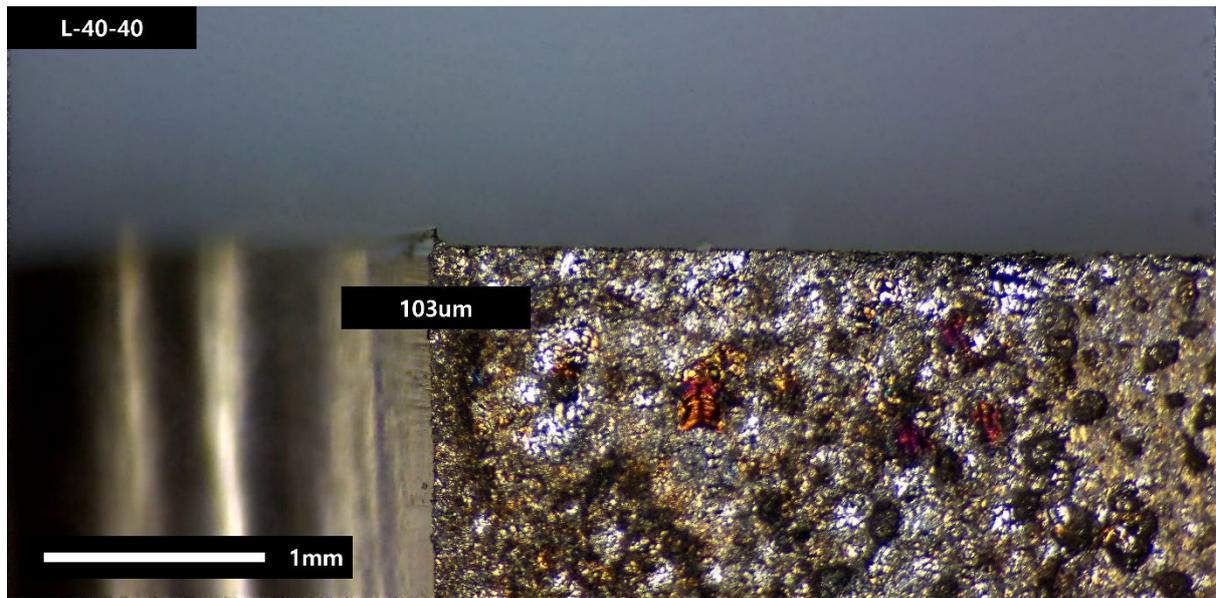
e)



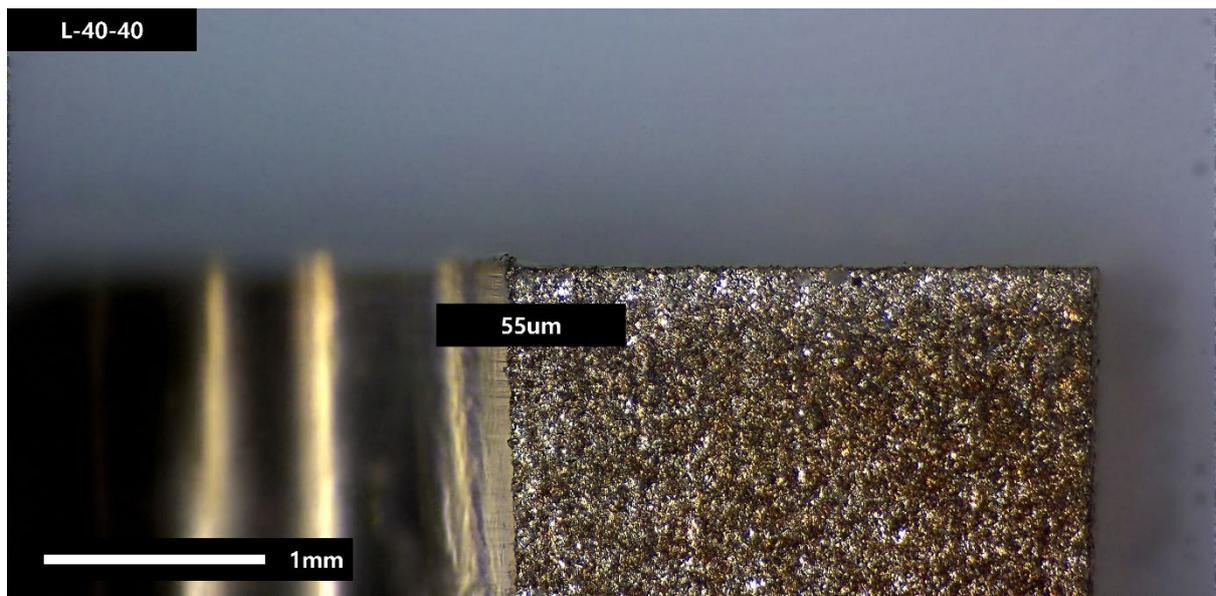
f)



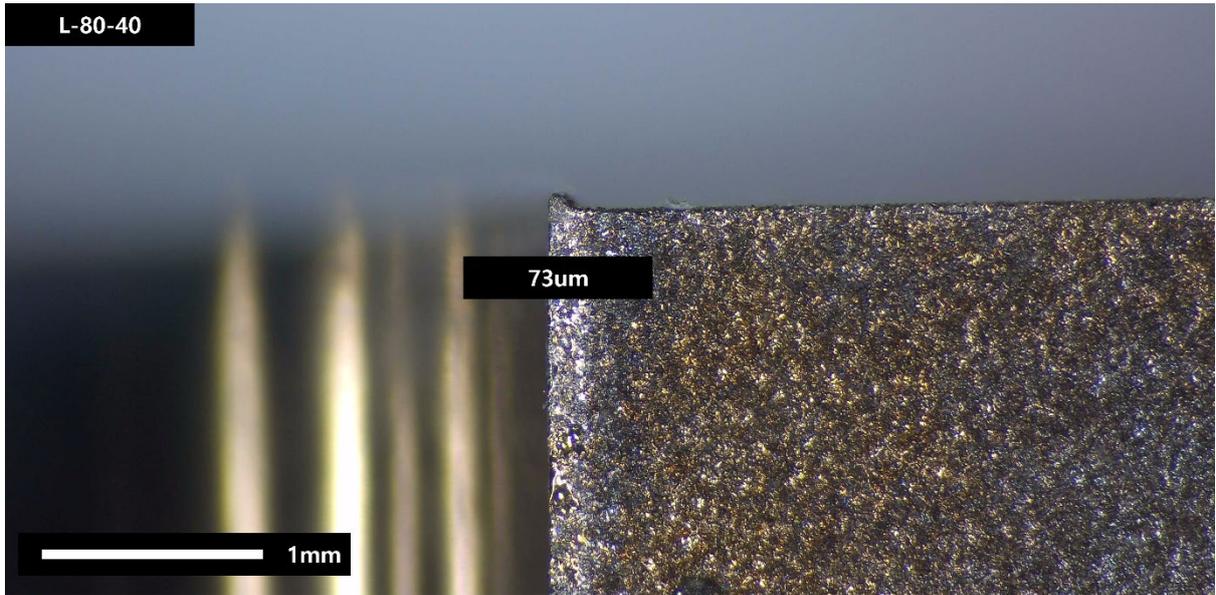
g)



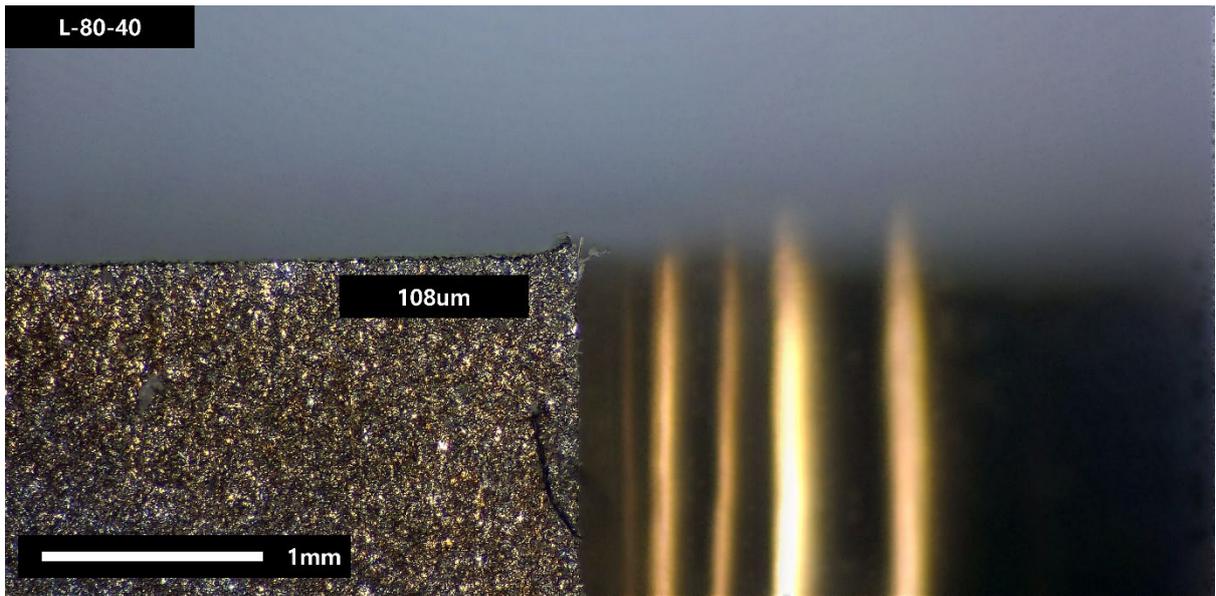
h)



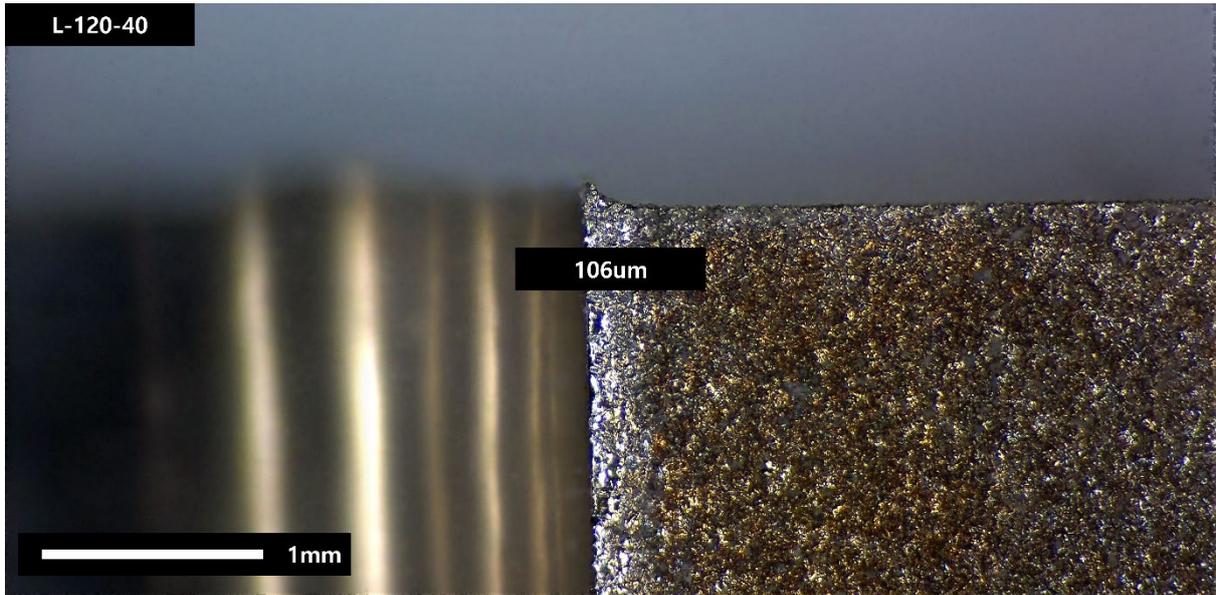
i)



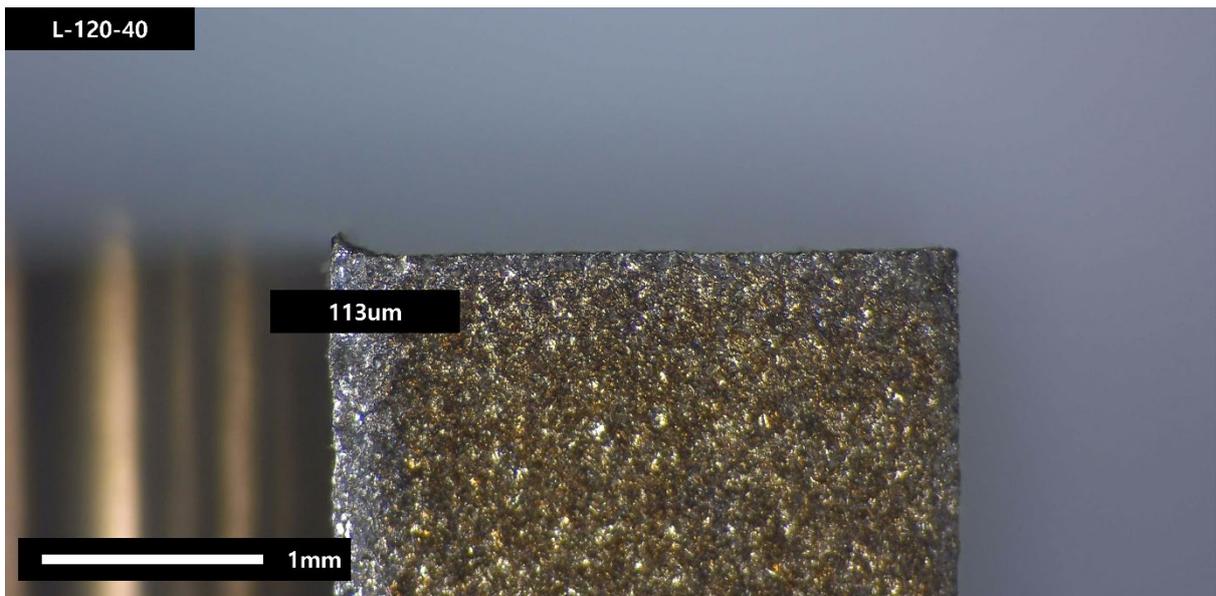
j)



k)



l)



2. Surface Roughness

Surface roughness is measured by dividing the total length into five sections of 5mm each, totaling 25mm. This process was repeated twice, and the table below represents the results.

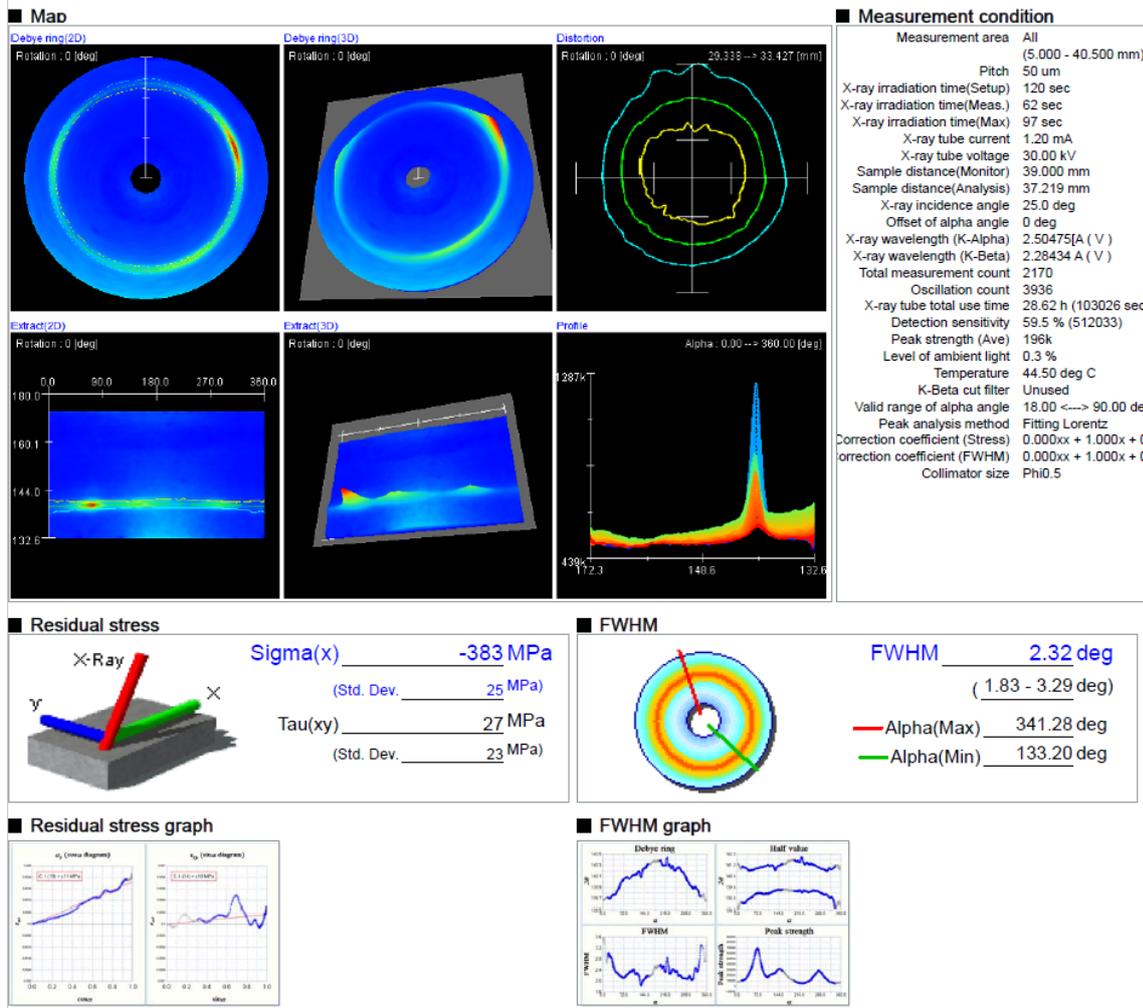
Table S1. The detailed surface roughness results measured under each condition.

Surface Roughness		
	CD [μm]	LFVAD [μm]
Vc: 40m/s #1	2.897	1.0787
Vc: 40m/s #2	1.721	1.3691
Vc: 80m/s #1	2.24	1.0879
Vc: 80m/s #2	0.8318	0.8162
Vc:120m/s #1	2.124	2.2801
Vc:120m/s #2	2.3244	2.2852

3. Residual Stress

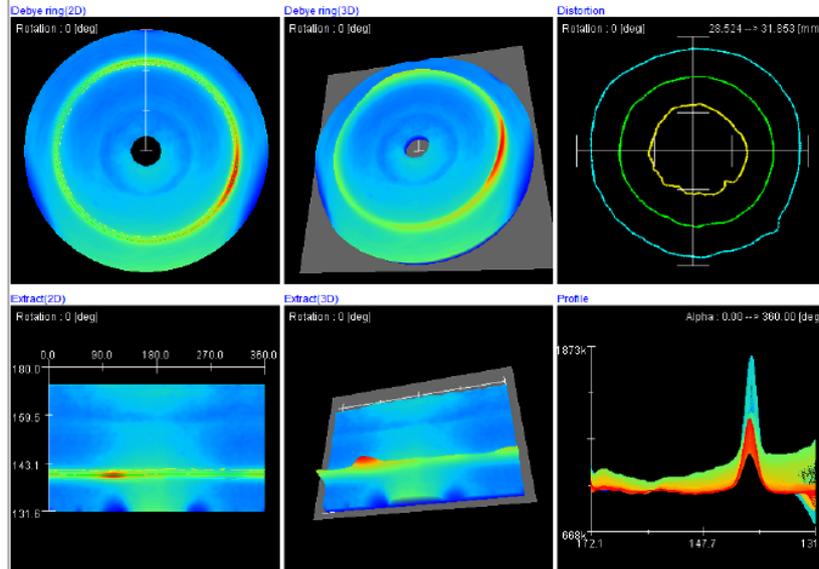
Figure S2. The detailed residual stress results measured under each condition. a; C-40-40, b; C-80-40, c; C-120-40, d; L-40-40, e; L-80-40, and f; L-120-40

a) C-40-40



b) C-80-40

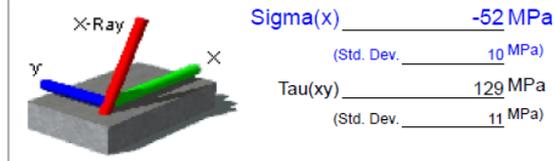
Map



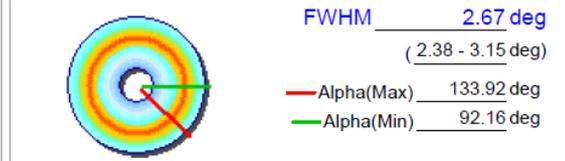
Measurement condition

Measurement area	All (5.000 - 40.500 mm)
Pitch	50 um
X-ray irradiation time(Setup)	120 sec
X-ray irradiation time(Meas.)	120 sec
X-ray irradiation time(Max)	120 sec
X-ray tube current	1.20 mA
X-ray tube voltage	30.00 kV
Sample distance(Monitor)	39.000 mm
Sample distance(Analysis)	38.014 mm
X-ray incidence angle	25.0 deg
Offset of alpha angle	0 deg
X-ray wavelength (K-Alpha)	2.50475(A (V)
X-ray wavelength (K-Beta)	2.28434 A (V)
Total measurement count	2188
Oscillation count	3936
X-ray tube total use time	29.21 h (105146 sec)
Detection sensitivity	72.4 % (622485)
Peak strength (Ave)	375k
Level of ambient light	0.3 %
Temperature	54.69 deg C
K-Beta cut filter	Unused
Valid range of alpha angle	18.00 <- -> 90.00 deg
Peak analysis method	Fitting Lorentz
Correction coefficient (Stress)	0.000xx + 1.000x + 0
Correction coefficient (FWHM)	0.000xx + 1.000x + 0
Collimator size	Phi0.5

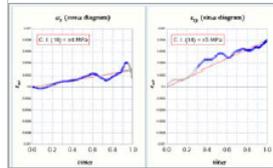
Residual stress



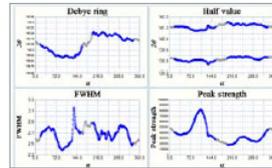
FWHM



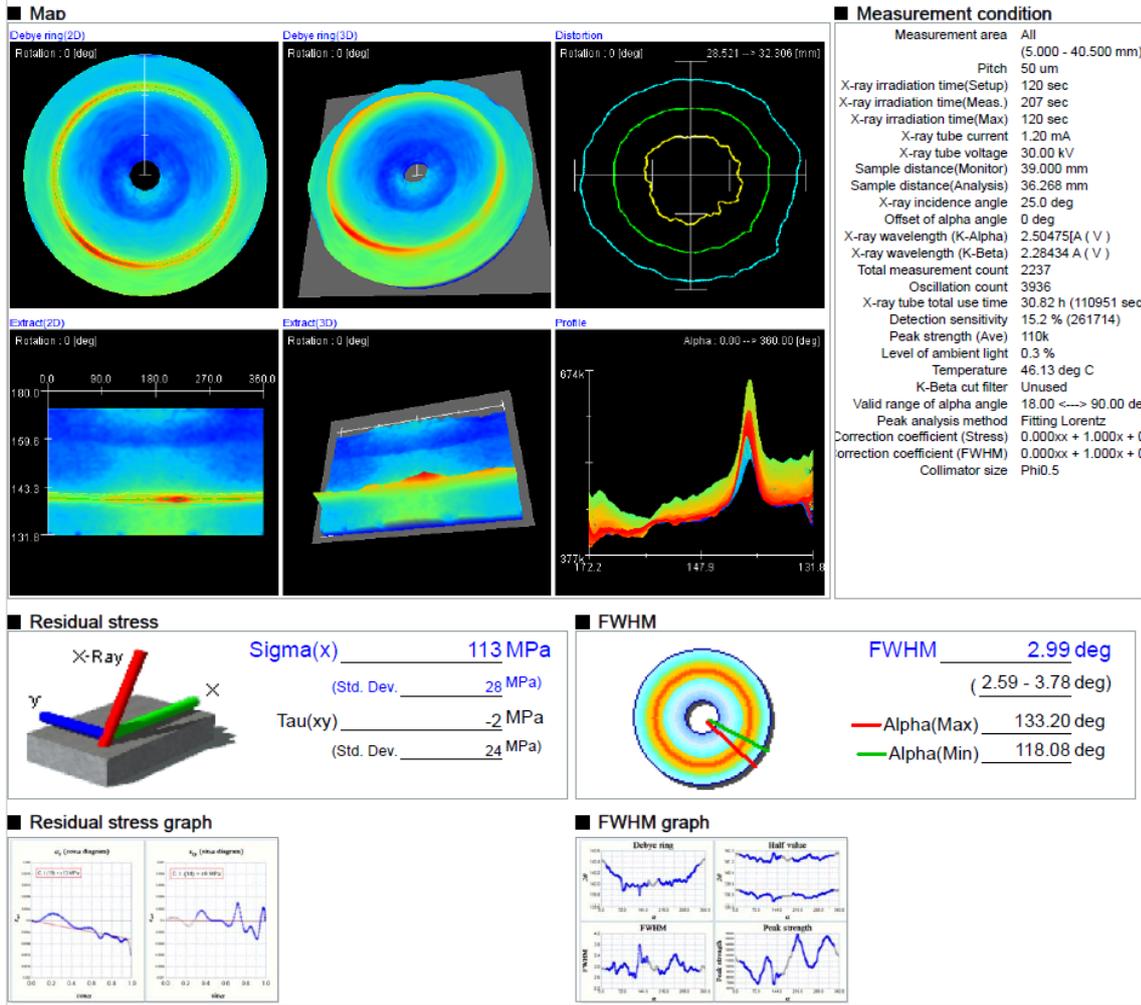
Residual stress graph



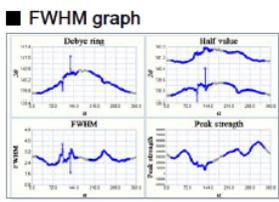
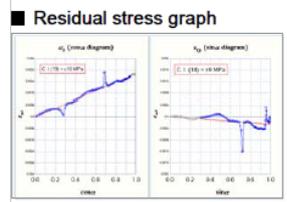
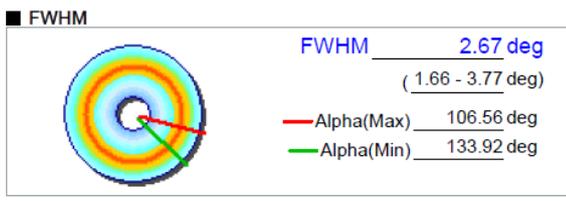
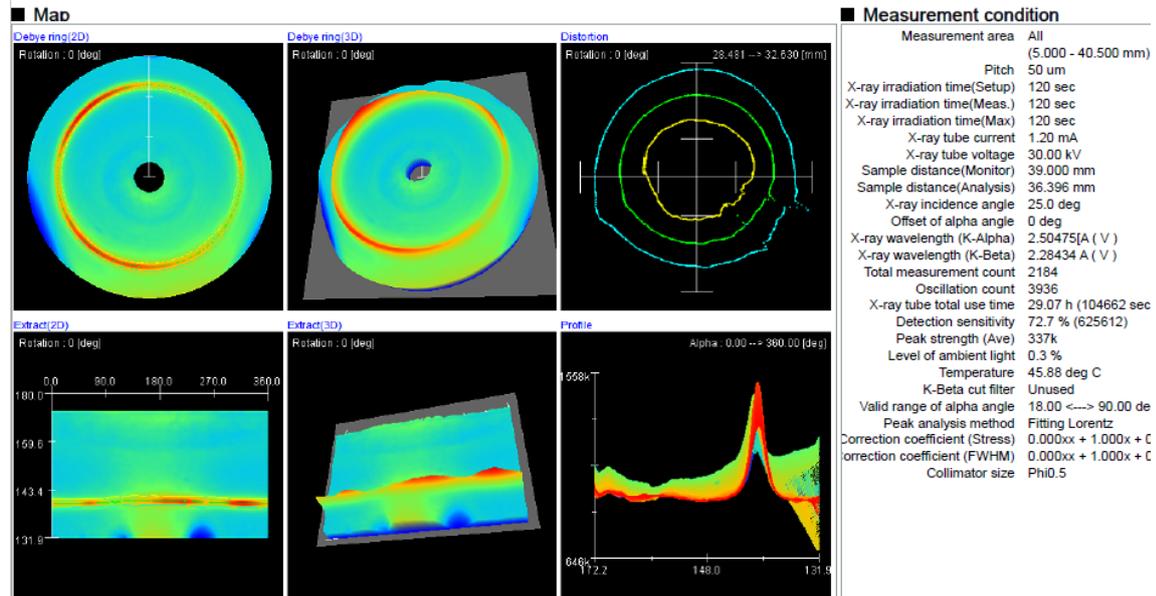
FWHM graph



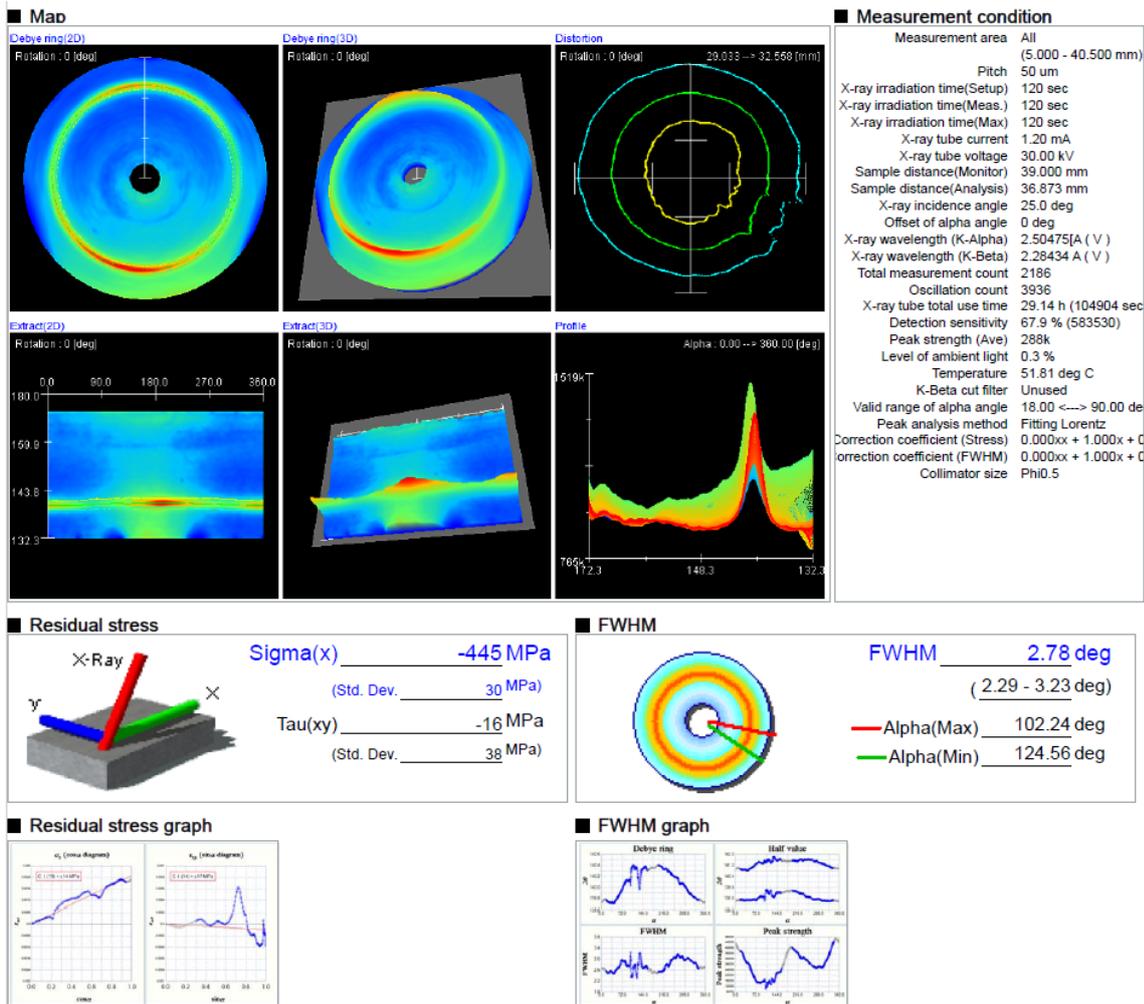
c) C-120-40



d) L-40-40



e) L-80-40



f) L-120-40

