FIZINIŲ IR TECHNOLOGIJOS MOKSLŲ CENTRAS

Efficient ablation of metals with modern ultrafast lasers

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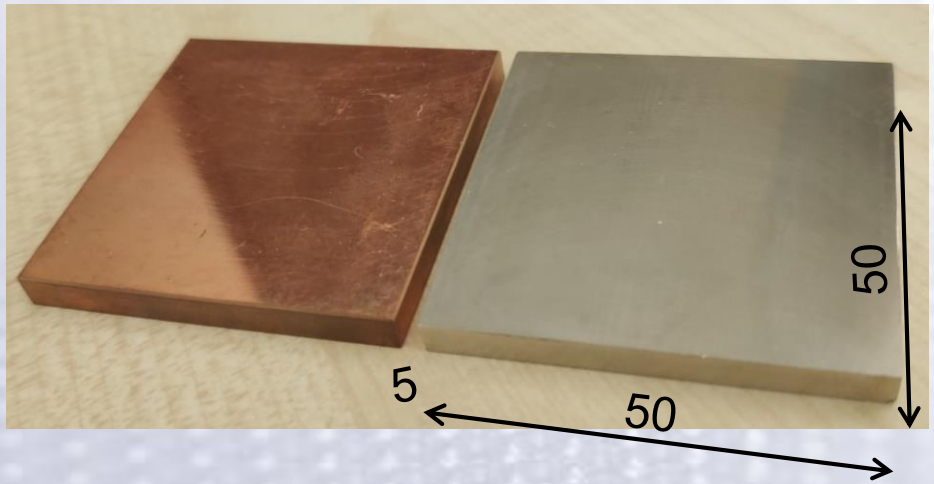
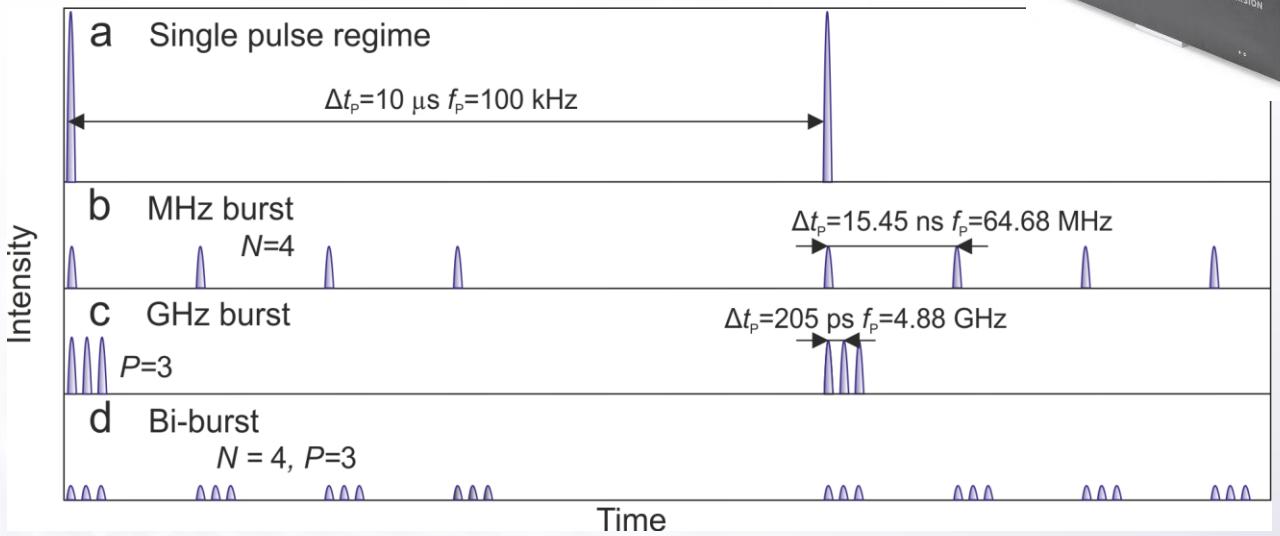
P. Gečys, EPIC tech. meeting: Growing Needs for Ultrafast, High Power Laser Applications

Laser	Pharos, Light Conversion
Wavelenght	1030 nm
Pulse lenght	210 fs
Burst rep. rate	100 kHz
Pulse rep. rate	64.68 MHz or/and 4.88 GHz
Average power	7.3 W
Galvo scanner	Intelliscan 14, SCANLAB
F-theta lens	+100 mm
Beam radius in focus	19.6 µm

Copper and stainless steel 1.4301 plates



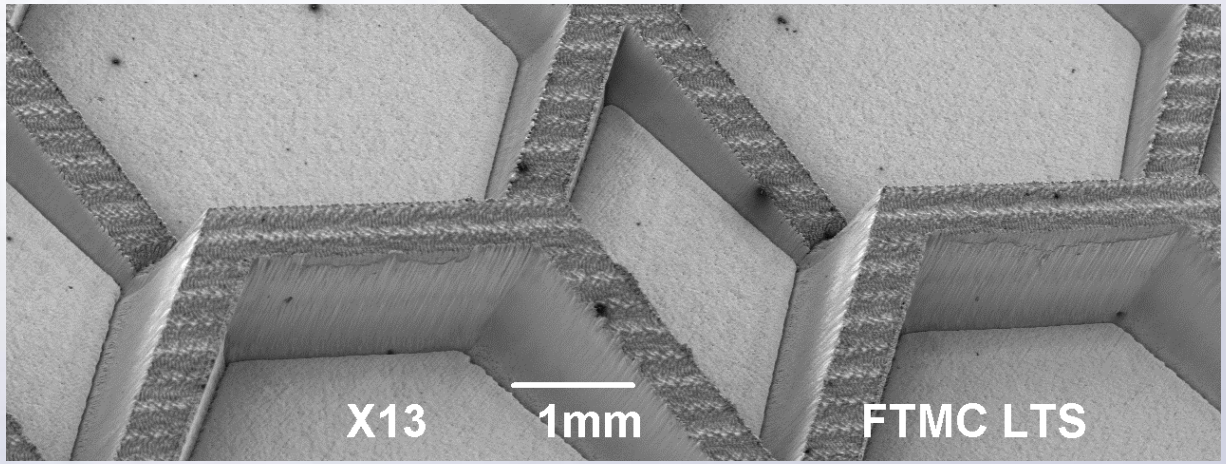
LIGHT CONVERSION PHAROS



$N = 2,\ldots,9$

$P = 2,\ldots,25$

All N and P



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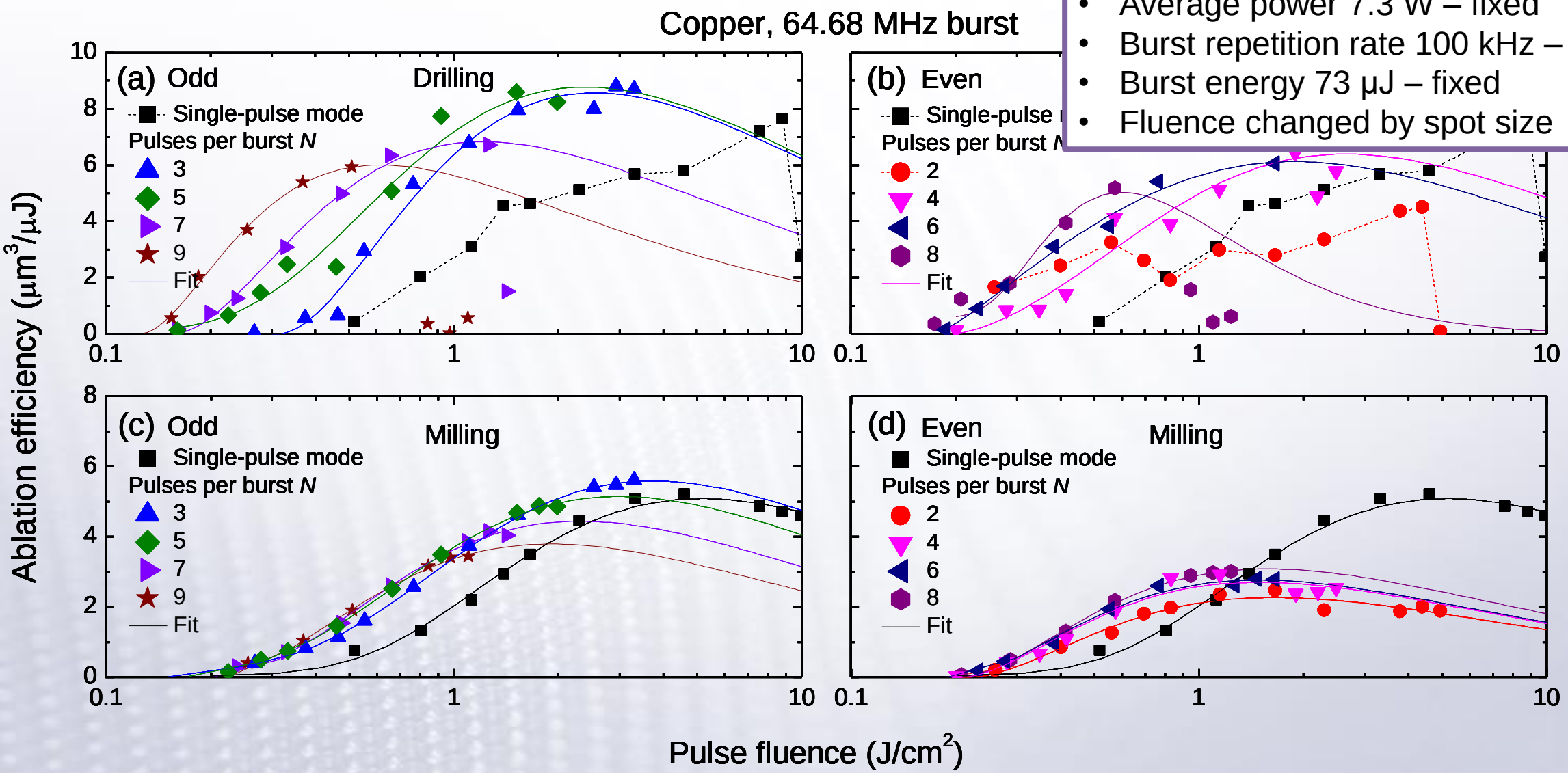
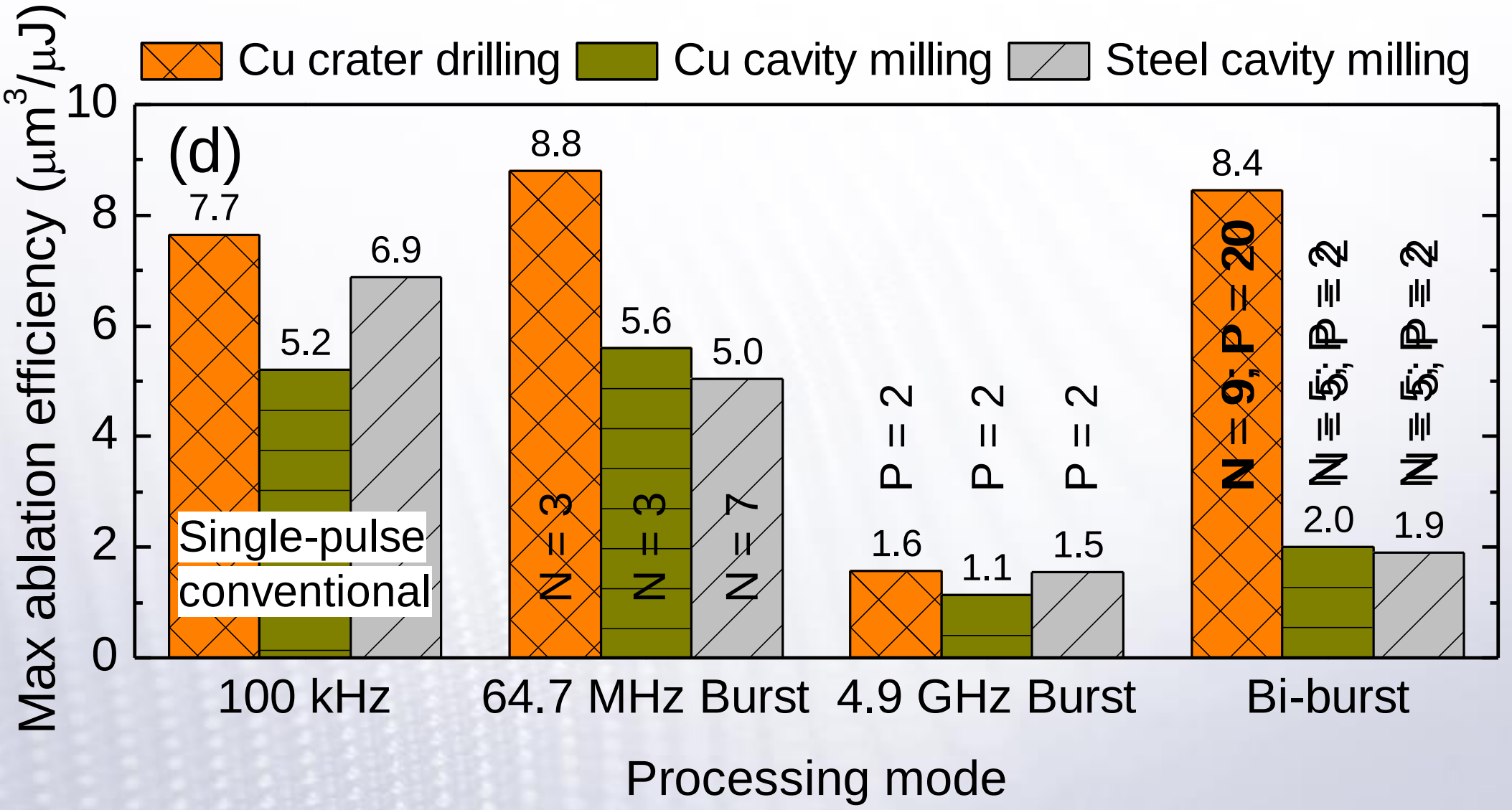
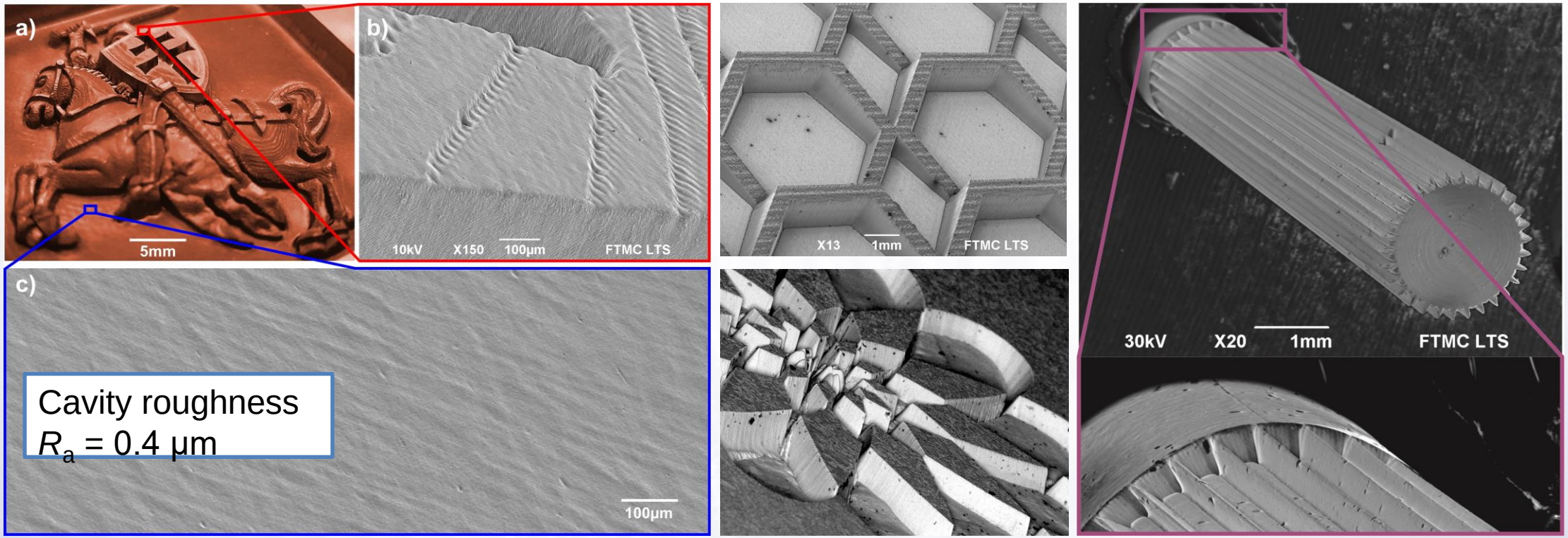
- Average power 7.3 W – fixed
- Burst repetition rate 100 kHz – fixed
- Burst energy 73 µJ – fixed
- Fluence changed by spot size




Cu crater drilling
Cu cavity milling
Steel cavity milling
Max ablation efficiency (μm³/μJ)
(d)
7.7
5.2
6.9
8.8
5.6
5.0
1.6
1.1
1.5
8.4
2.0
1.9
Single-pulse conventional
N = 3, P = 2
N = 3, P = 2
N = 7, P = 2
N = 9, P = 20
N = 5, P = 2
N = 5, P = 2
0
2
4
6
8
10
100 kHz
64.7 MHz Burst
4.9 GHz Burst
Bi-burst
Processing mode



Laser microfabrication Lab **www.lts-ftmc.lt/en/**

Thank you & Questions ?