Electronic Supplementary Material (ESI) for Lab on a Chip.
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Supplementary information: Polarisation-independent ultrafast laser selective etching processing in fused silica

Mario Ochoa,[a,b,c,‡,*] Pablo Roldán-Varona,[a,b,c,‡], José Francisco Algorri,[a,b,c], José Miguel López-Higuera[a,b,c] and Luis Rodríguez-Cobo[a,b,c]

1 Etching rates for extended pulse repetition rates and energies as a function of the number of pulses

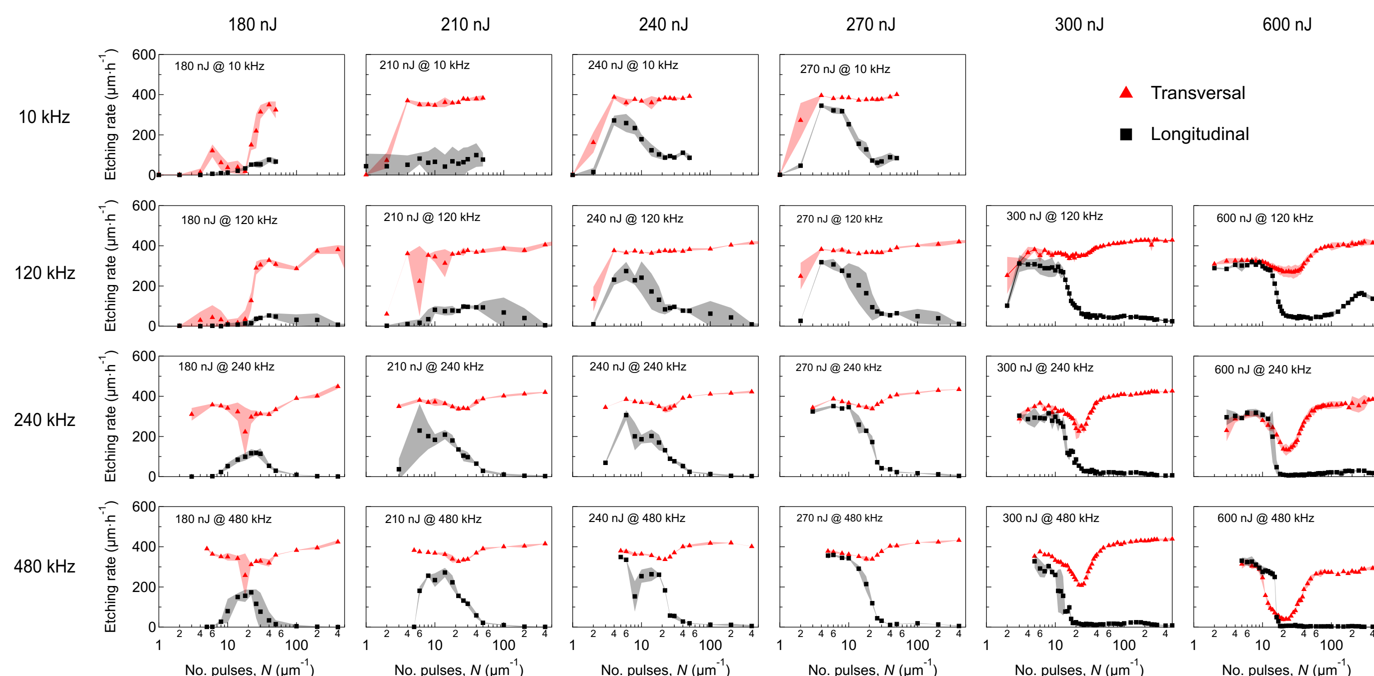

Fig. S1 Etching rates for transversal and longitudinal polarization for several pulse repetition rates and different pulse energies as a function of the number of pulses.

[a] *Photonics Engineering Group, Universidad de Cantabria, 39005 Santander, Spain.*
[b] *Instituto de Investigación Sanitaria Valdecilla (IDIVAL), 39011 Santander, Spain.*
[c] *CIBER de Bioingeniería, Biomateriales y Nanomedicina, Instituto de Salud Carlos III, 28029 Madrid, Spain.*
‡ These authors contributed equally to this work
* Contact: mario.ochoa@unican.es

2 Etching rates comparison between KOH and NaOH

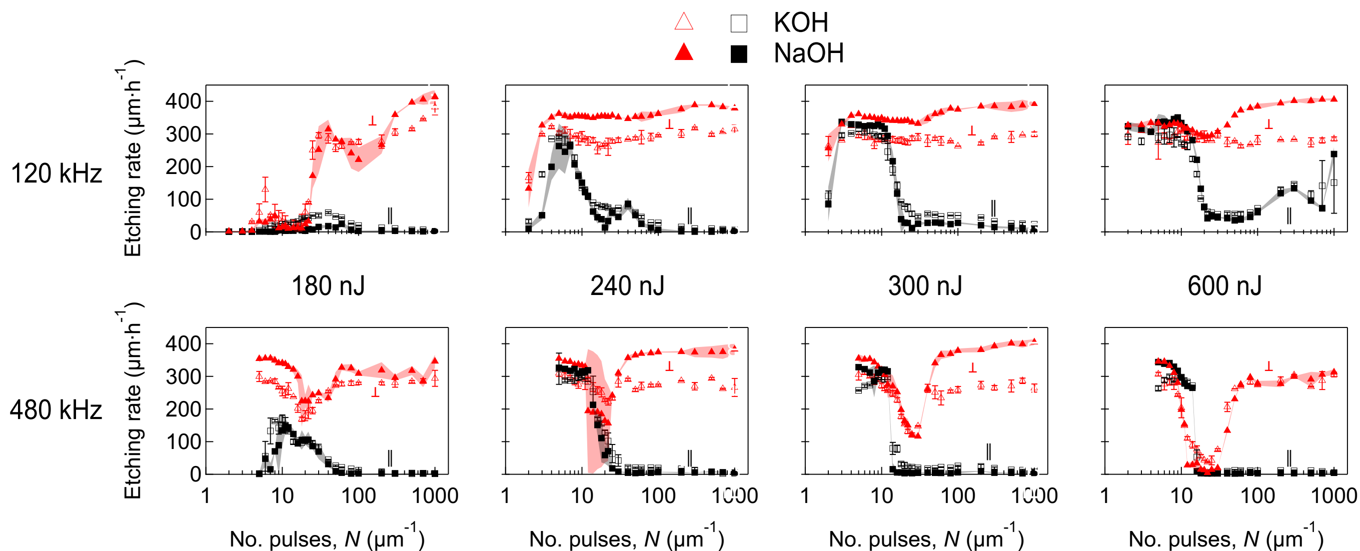

Fig. S2 Comparison of etching rates using two different etching solutions for different pulse energies and repetition rates. Both etching solutions yield similar etching rates and trends with the number of pulses, hence the mechanisms behind etching are likely the same. The highest etching rates correspond to the nanogratings regime for NaOH and by setting the polarisation perpendicular to the beam writing direction. Note that different samples than those of Figure S1 have been used for NaOH obtaining comparable results. Etching time was 4 hours for NaOH solution of 5 wt% and KOH of 40 wt%.

3 SEM results

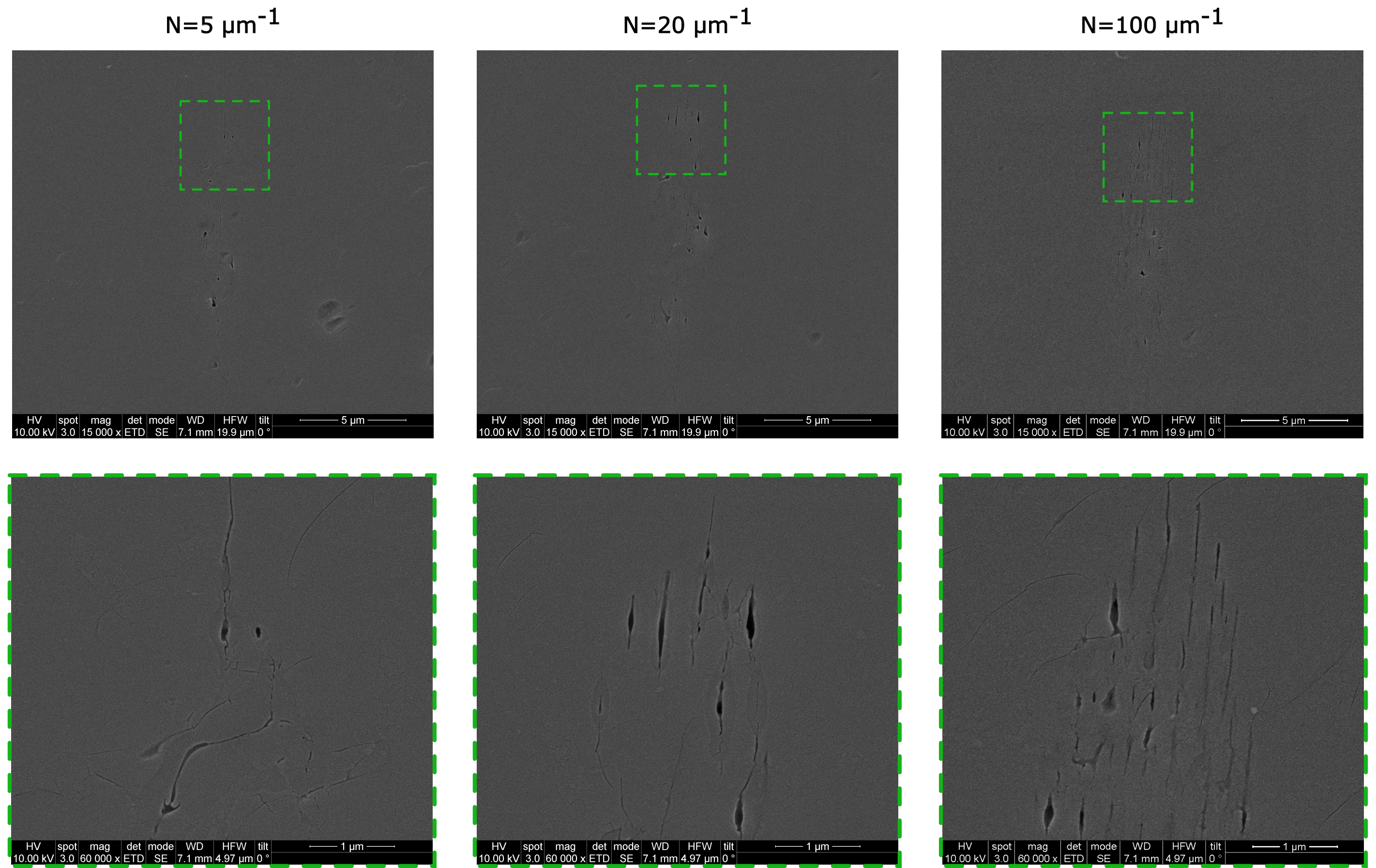

Fig. S3 SEM images of the cross section of laser affected zone using transversal polarization at 600 nJ and 120 kHz for pulses N=5 (left), N=20 (middle) and N=100 µm^{-1}(right). Green squares indicate the region shown in the bottom row images with higher magnification. After inscription, the sample was polished and etched for 2 minutes in NaOH solution (5 wt%).