Selective ablation of biological tissue and single cells on a glass substrate by controlling the laser energy density of nanosecond 193 nm laser radiation

Thibaut Van Acker,[†a] *Stijn J. M. Van Malderen,*[† b] *Legna Colina-Vegas,*[c] *Ranjith K. Ramachandran,*[d] *and Frank Vanhaecke*[a,*]

[a]*Ghent University, Department of Chemistry, Atomic & Mass Spectrometry – A&MS research unit, Campus Sterre, Krijgslaan 281-S12, 9000 Ghent, Belgium*

[b]*Ghent University, Department of Chemistry, X-ray Microspectroscopy and Imaging (XMI) research unit, Campus Sterre, Krijgslaan 281-S12, 9000 Ghent, Belgium*

[c]*Federal University of São Carlos, Department of Chemistry, Km 235 São Carlos – São Paulo, Brazil*

[d]*Ghent University, Department of Solid State Sciences, COCOON, Campus Sterre, Krijgslaan 281-S1, 9000 Ghent, Belgium*

[*]*Corresponding author. E-mail address: Frank.Vanhaecke@UGent.be, phone number: +32 9 264 4848, fax number: +32 9 264 4960*

Author contact information:

Thibaut Van Acker	Thibaut.VanAcker@UGent.be	ORCID: https://orcid.org/0000-0002-0649-7228
Stijn J. M. Van Malderen	Stijn.VanMalderen@UGent.be	ORCID: https://orcid.org/0000-0002-3879-7882
Legna Colina-Vegas	Legna.ColinaVegas@UGent.be	ORCID: https://orcid.org/0000-0003-3557-5544
Ranjith K. Ramachandran	Ranjith.KaruparambilRamachandran@UGent.be	ORCID: https://orcid.org/0000-0002-9423-219X
Frank Vanhaecke	Frank.Vanhaecke@UGent.be	ORCID: https://orcid.org/0000-0002-1884-3853

Supporting Information

1. Quantification bulk elemental composition *via* X-ray fluorescence (XRF) analysis

For the determination of the bulk elemental composition of the SLS glass coverslip, an EDAX Eagle III X-ray fluorescence (XRF) spectrometer (EDAX Inc., Mahwah, NJ, USA), equipped with a Rh X-ray tube, operated at 40 kV and 50 µA, fitted with polycapillary optics and a liquid N_2-cooled Si(Li) detector, was used. The measurements were performed under vacuum conditions using a beam of 400 µm diameter (500 s) and quantification was achieved *via* a fundamental parameter based standardless method. The EDAX Eagle III software package was used to perform the quantification of the XRF data.

2. Figure SI 1

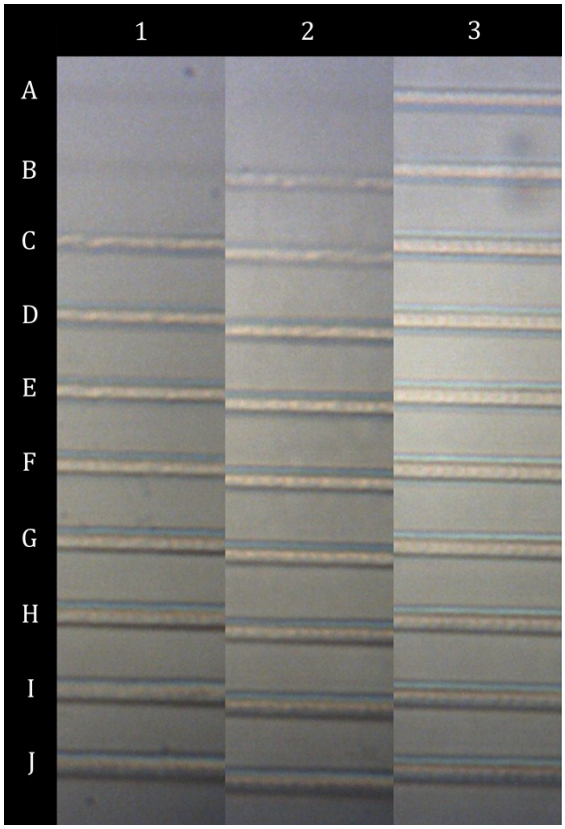

Figure SI 1. Brightfield microscopic image of the line scan craters in the different glass substrates, (1) SLS glass microscope slide, (2) SLS glass coverslip and (3) borosilicate glass coverslip, after ablation at different laser energy densities, (A) 220, (B) 270, (C) 330, (D) 380, (E) 440, (F) 490, (G) 540, (H) 600, (I) 650 and (J) 710 mJ cm^{-2}.