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Supporting information for article:

Time and space resolved modelling of the heating induced by synchrotron X-ray nanobeams

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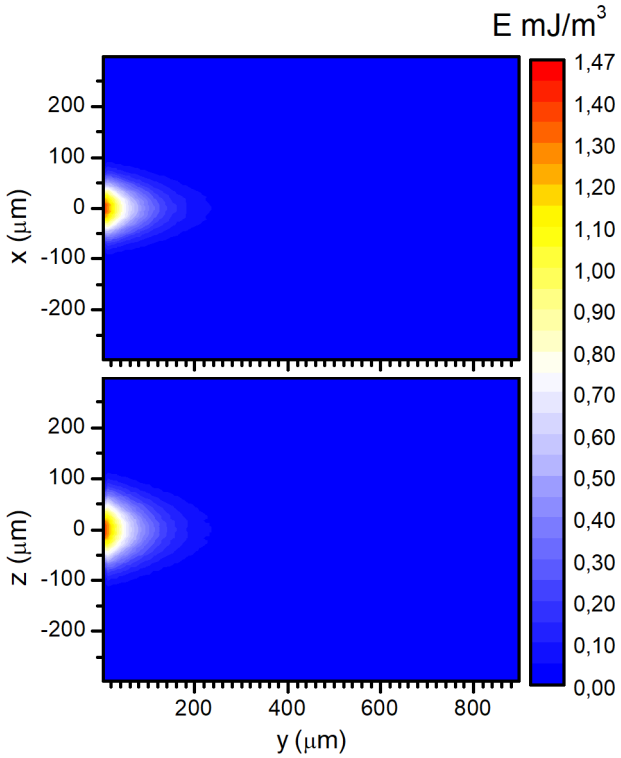

Figure S1 2D plots of the energy spatial distributions evaluated by the MCNP6 code for the glass bead. The *yx*– and *yz*–planes of symmetry are shown.

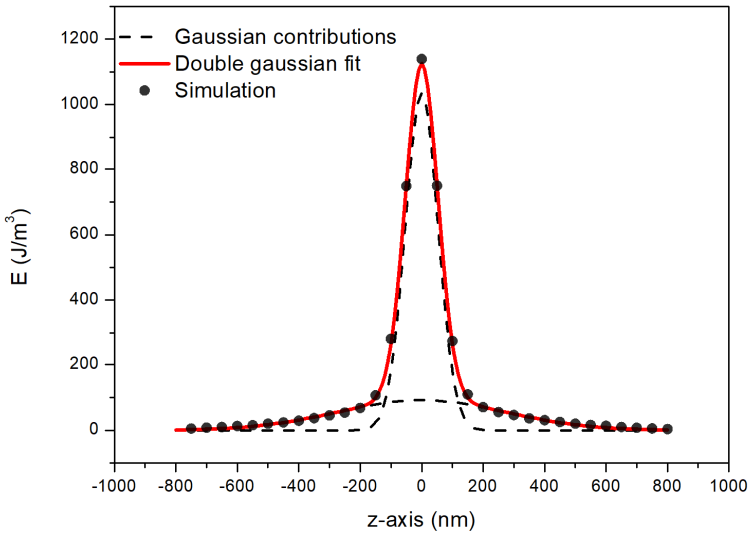

Figure S2 Example of double Gaussian profile used to fit the energy density distribution in one of the two directions perpendicular to the beam. Black points represent the energy distribution data points calculated via MC simulations, the red solid line is the fitted profile as resulting from the sum of two Gaussian contributions, the dashed black lines show each individual Gaussian contribution.

In the adiabatic approximation, the $FWHM_{xz}$ values used to estimate the energy-deposition volume were obtained by fitting to a double Gaussian function the cross-section profile of the energy-deposition curves. An example of the resulting fitting process is shown in Figure S2 for the sample WBAP13 along the z direction. It is possible to appreciate how the highest values of the energy distribution profile (at z = 0 nm) maintain a shape similar to the incoming X-ray beam and can be fitted to a Gaussian functions whose FWHM's simply mirror the experimental sizes of the beam, whereas at low values of the energy density (at $z > 150$ nm) the diffusive behaviour prevails, making the use of a second, wider Gaussian profile necessary. The $FWHM_{xz}$ reported in Table 5, were taken in the cross-section plane where the maximum of the energy-deposition is achieved, by selecting the FWHM of the diffusive contribution only, and averaging the values along the x- and the z- directions.