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**Supporting information for article:**

# Brittle fracture studied by ultra-high-speed synchrotron X-ray diffraction imaging

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## Data overview

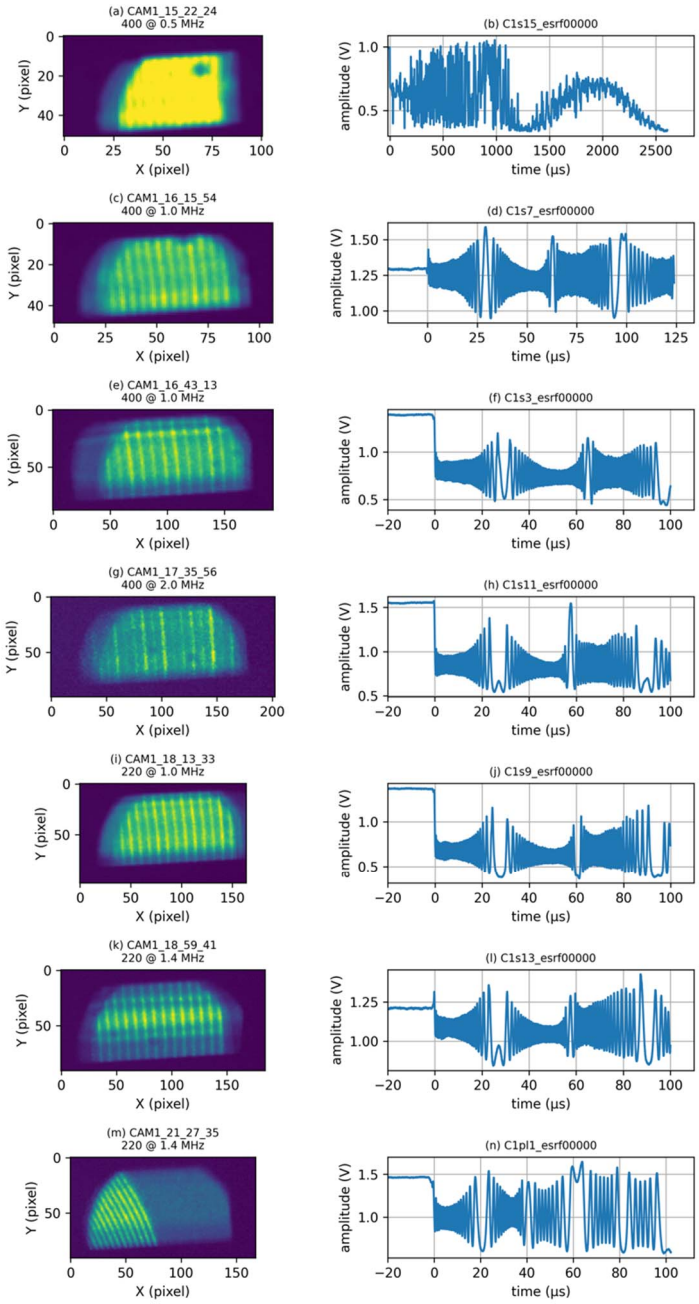


Figure S1: Overview of the data acquired during the beamtime in different samples. (a), (c), (e), (g), (i), (k), (m): Max-filtered image of all the acquired frames. All samples are either [100] or [110] strip samples, except for the last one which was a full wafer. The measured Bragg reflection is indicated in the title of each figure. (b), (d), (f), (h), (j), (l), (n): corresponding oscilloscope signal from the IR laser.

## Time evolution in the horizontal direction

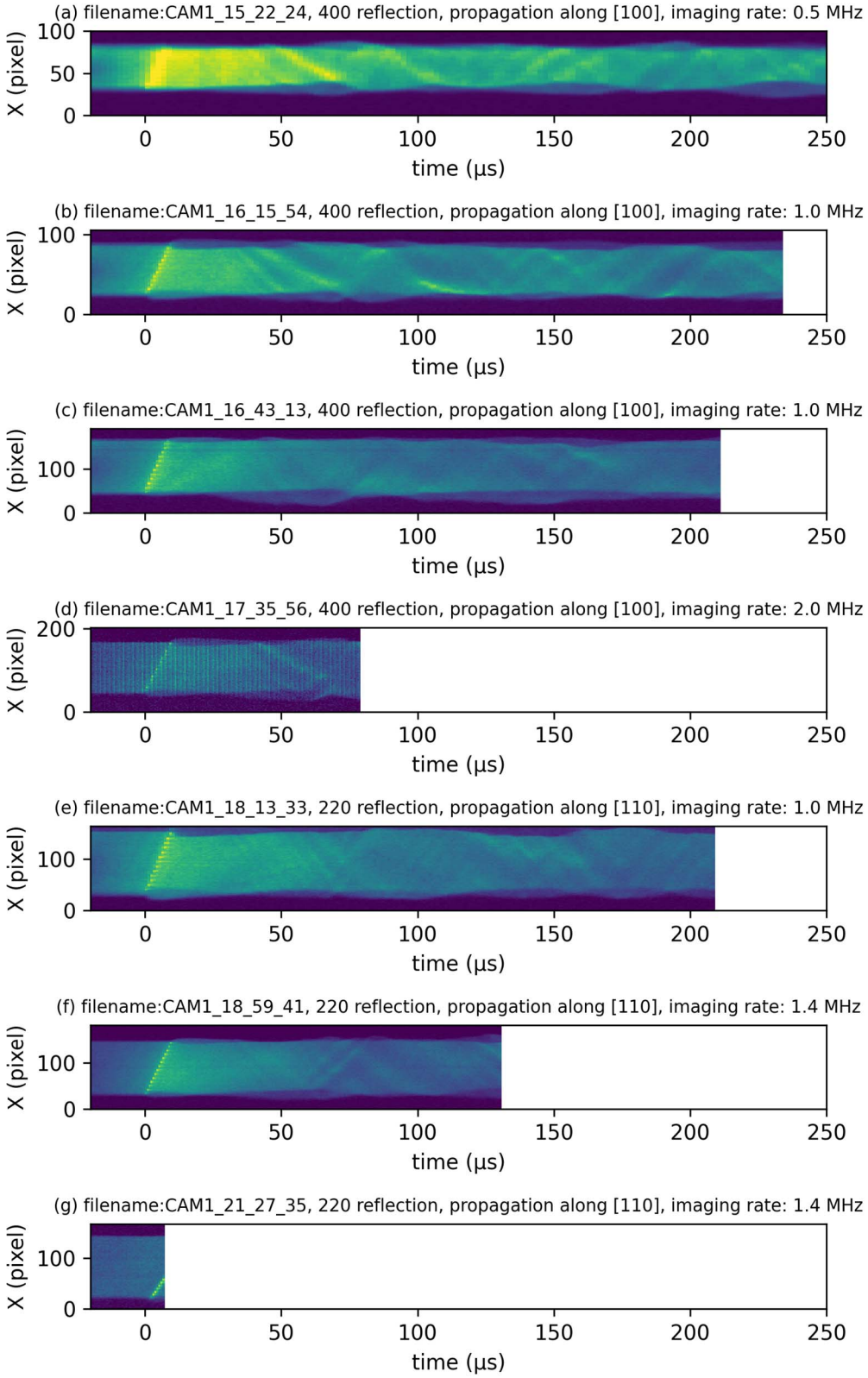


Figure S2: (a)-(g) Time evolution in the horizontal *x* plane for all the samples (see Figure S1).

## Du Mond diagram for the ID19 experiment

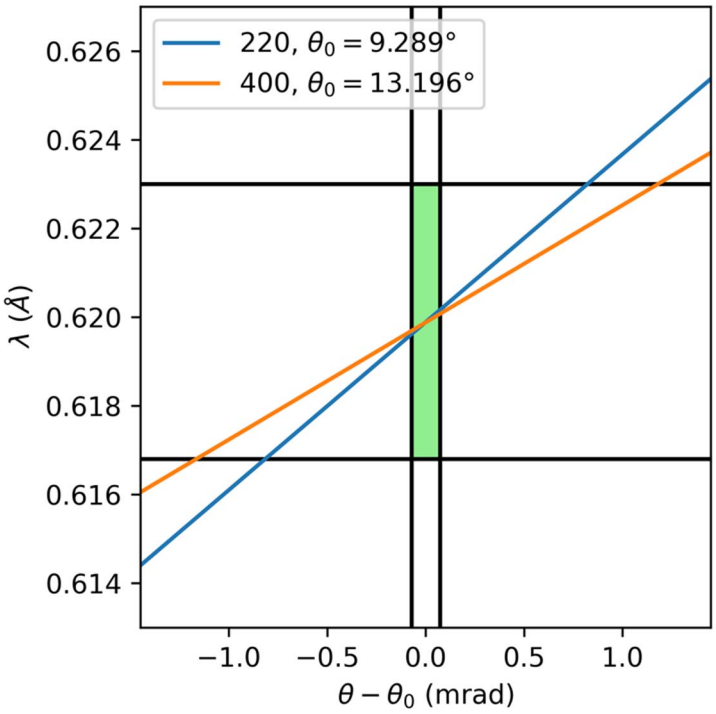


Figure S3: Du Mond diagram for the experiment, for the 220 and 400 reflections of Si at 20 keV. The blue and orange solid lines are the Bragg law for each reflection $\lambda = 2d_{hkl}\, sin\, \theta$, where $\theta_0$ is the nominal value at 20 keV ($\lambda = 0.620$Å) . Any rotation of the sample results in a horizontal shift of the corresponding line. The black vertical (horizontal) lines indicate the estimated divergence (bandwidth) of the beam and delimit the allowed imaging region (green area).

## Comparison of the crack velocity in the [110] and [100] strip samples

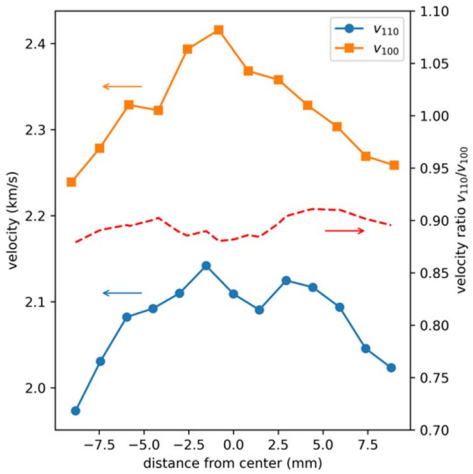


Figure S4: Comparison of the local crack velocity measured in the [110] and [100] strip samples and their ratio.