1 Image analysis

The pre-processing workflow was as follows:

1. Make image 8 bit

2. Despeckle

3. Non-local Means Denoise (sigma = 5, smoothing = 1)

4. Non-local Means Denoise (sigma = 15, smoothing = 1)

5. Threshold (<10)

6. Make binary

7. Manually erase cross cutting pores

The workflow for the mask used used in figure 2 was as follows:

1. Make image 8 bit

2. Non-local Means Denoise (sigma = 15, smoothing = 1)

3. Remove outliers: Dark (radius = 4, threshold = 50)

4. Threshold (<50)

5. Make binary

6. Remove outliers: Bright (radius = 12, threshold = 50)

7. Threshold (<50)

8. Make binary
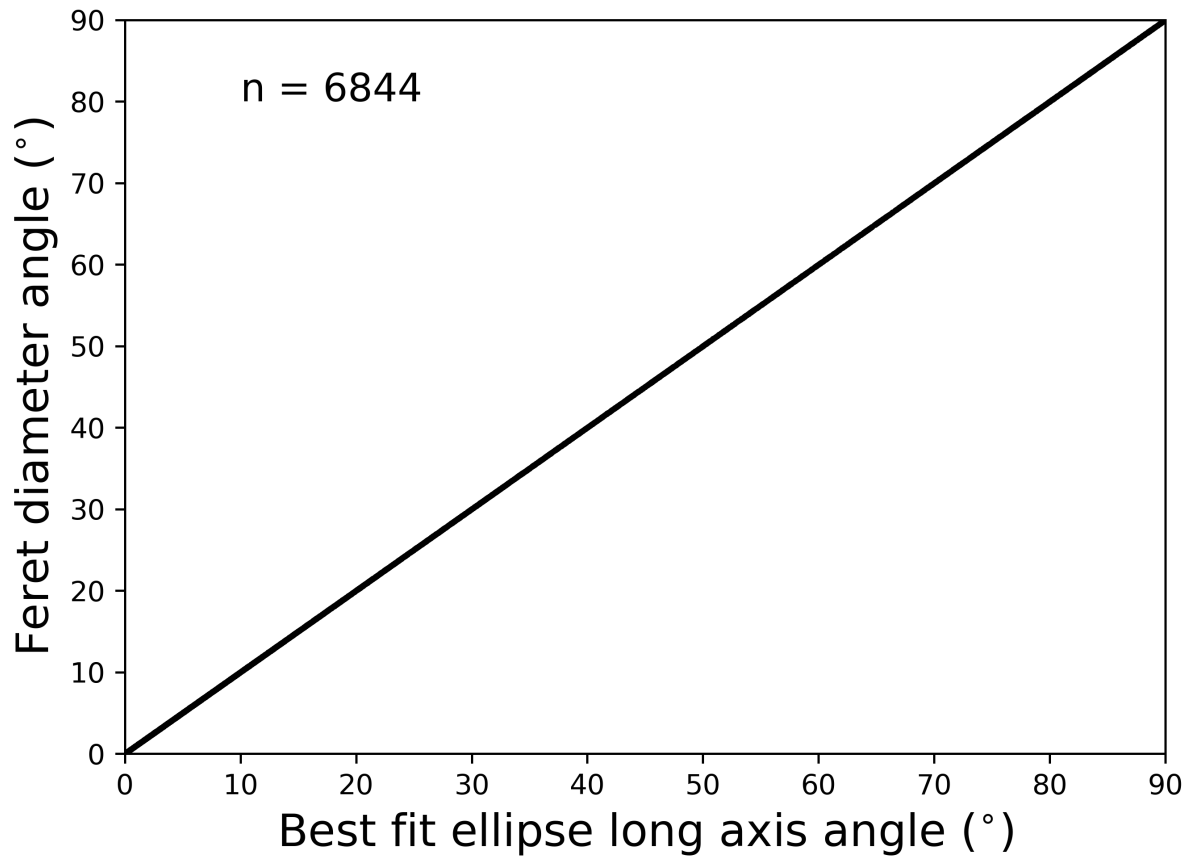
Figure 1: Comparison of the Feret's diameter and the long axis of the best fit ellipse, for pores with a circularity < 1 .
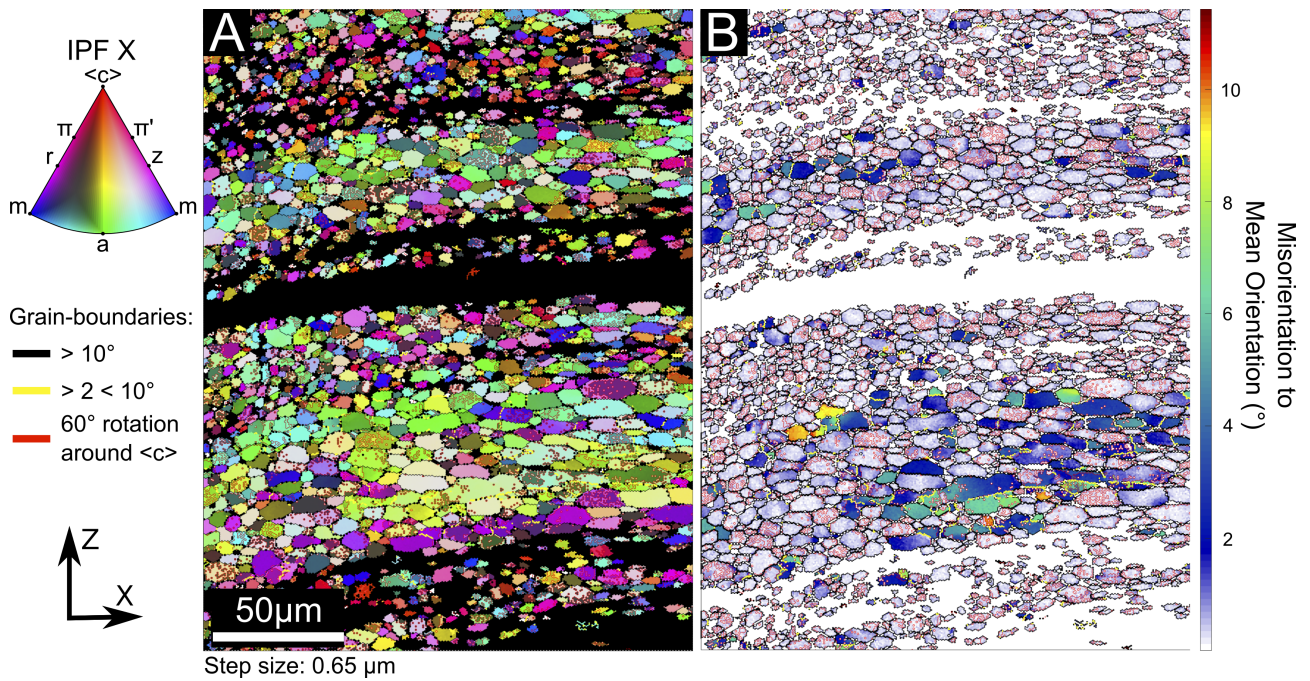
Figure 2: Further EBSD results. Fig. 1a displays an inverse pole figure map, presented for the X-direction of finite strain, with grain and special boundaries overlain. Fig. 1b highlights intracrystalline plasticity by plotting the misorientation of individual pixels to the mean orientation of the host grain.