

Supplementary data

Detwinning/twin growth-induced phase transformation in a metastable compositionally complex alloy

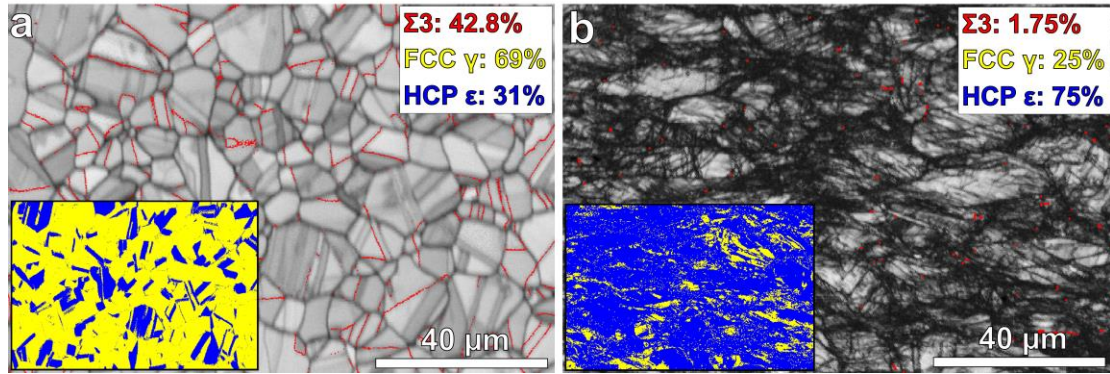
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Figure S1a displays a typical electron backscattered diffraction (EBSD) image quality (IQ) map of the CCA alloy decorated by the $\Sigma 3$ twin boundaries (red lines) prior to tensile deformation. The inset in this figure is a phase map and shows that the fractions of $\Sigma 3$ twin boundaries, HCP and FCC phases are 42.8%, 69% and 31%, respectively. Upon a local strain of 70% deformation, the EBSD data, including the IQ and phase maps of the same alloy, are presented in Figure S1b. It is shown that the phase fraction of the FCC phase is significantly reduced to 25%, while a large amount of the HCP phase is generated from 31% to 75%. Moreover, almost no $\Sigma 3$ twin boundaries can be observed in this deformed CCA alloy. This may suggest that the reduction of $\Sigma 3$ twin boundaries is strongly related to the increment of the HCP phase during the deformation process.



Supplementary Figure 1. EBSD IQ and phase maps of CCA alloy (a) before and (b) after tensile deformation. The local strain is $\sim 70\%$. The $\Sigma 3$ twin boundary, HCP and FCC phases are highlighted by red, blue and yellow, respectively.