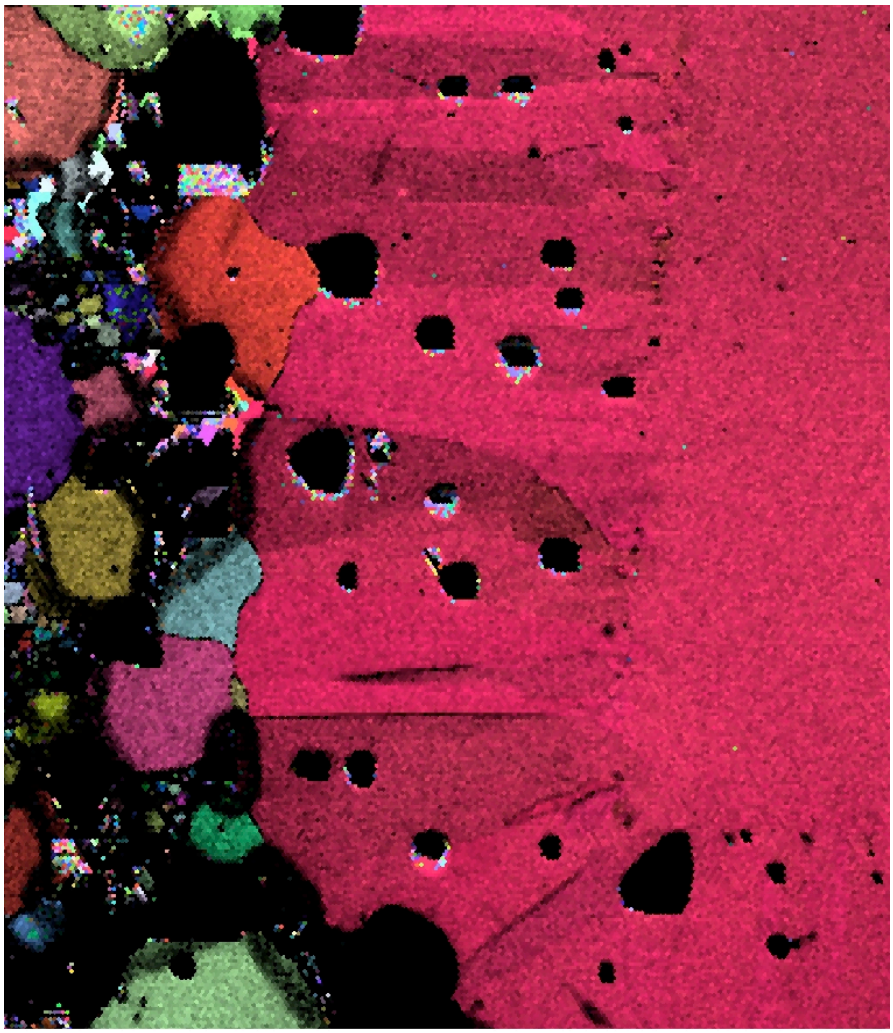
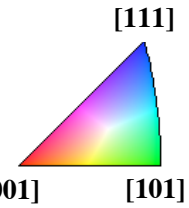
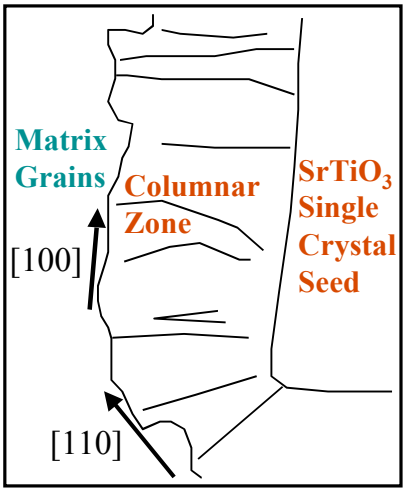
Templated Columnar Grain Growth



75.00 μm = 50 steps IQ 51.75...82.8, IPF [001]



A large (100) $SrTiO_3$ single crystal seed was embedded in TiO_2-rich $SrTiO_3$ powder compact and heated at 1500°C for 5 h in air. At this temperature, 15 volume % of the matrix was liquid. The orientation map above, recorded in an SEM, shows that the epilayer that grows on the seed from the titania rich liquid has a columnar microstructure. The columns advance in both the [100] and [110] directions. The contrast in the micrograph arises from both orientations and the quality of the backscattered pattern. The interfaces, which are not apparent in SEM or optical micrographs, have misorientations of less than 1°.



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Classification: