

## Symposium J

### Interfacial nanostructures in ceramics: a multiscale approach

NANOSTRIPES IN  $\text{GdBa}_2\text{Cu}_3\text{O}_x$  HIGH- $T_c$  SUPERCONDUCTORS, M. R. KOBLISCHKA, M. WINTER, P. DAS, U. HARTMANN, Institute of Experimental Physics, P.O. Box 151150, D-66041 Saarbrücken, Germany, A. KOBLISCHKA-VENEVA, Institute of Functional Materials, P.O. Box 151150, D-66041 Saarbrücken, Germany

High- $T_c$  superconductors with light rare earth (LRE) elements instead of Y exhibit nanoscale stripe structures on the surface as observed by AFM and STM scans. Within the  $\text{GdBa}_2\text{Cu}_3\text{O}_x$  (GdBCO) system exhibiting relatively high critical current densities, nanoclusters arranged in a stripe-like fashion are observed in undoped material, while adding of nanoparticles ( $\text{ZnO}_2$ ,  $\text{ZrO}_2$ ) leads to the formation of nanostripes as observed in other LRE superconductors. The nanostripes in doped GdBCO exhibit periodicities between 20 and 50 nm and corresponding step heights of 0.3 – 0.8 nm. Using polarized light microscopy and electron backscatter diffraction (EBSD) analysis, we determined the direction of the nanostripes with respect to the known twin structure.