

## **Observation of nanostripes and –clusters in NEG superconductors**

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Nanostripes are observed in melt-textured and single-crystalline samples of the ternary light rare earth (LRE) compound  $(\text{Nd}_{0.33}\text{Eu}_{0.33}\text{Gd}_{0.33})\text{Ba}_2\text{Cu}_3\text{O}_x$  (NEG) by means of atomic force microscopy, scanning tunnelling microscopy at ambient conditions, combined with transmission electron microscopy and electron backscatter diffraction. This enables the observation of several important features: The nanostripes are formed by chains of nanoclusters, representing the LRE/Ba substitution. The dimensions of the nanostripes are similar for both types of NEG samples. The periodicity of the nanostripes is found to range between 40 and 60 nm; the shape of the nanoclusters is elliptic with a major axis length between 300 and 500 nm and a minor axis length of about 30 to 150 nm. The stripes are effectively filling the space in between the twin boundaries. Concerning the flux pinning, it remains an open question if the nanostripes or the nanoclusters are the important flux pinning sites. In case of an effective  $\delta T_c$  pinning, the nanoclusters would play the more important role.