Electronic Supplementary Material (ESI) for Materials Advances.

Supplementary information for:

Enantioselective Chiral Surface: Tartaric Acid on All Surfaces Vicinal to Cu(111)

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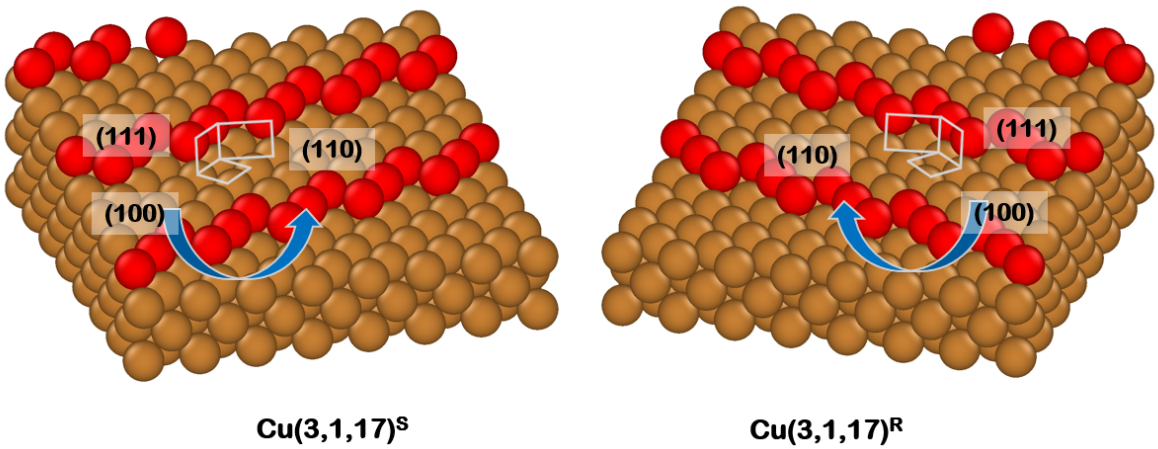
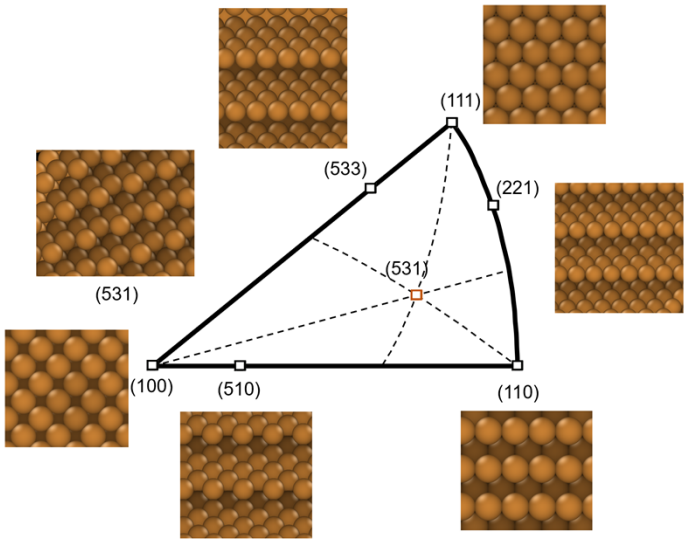
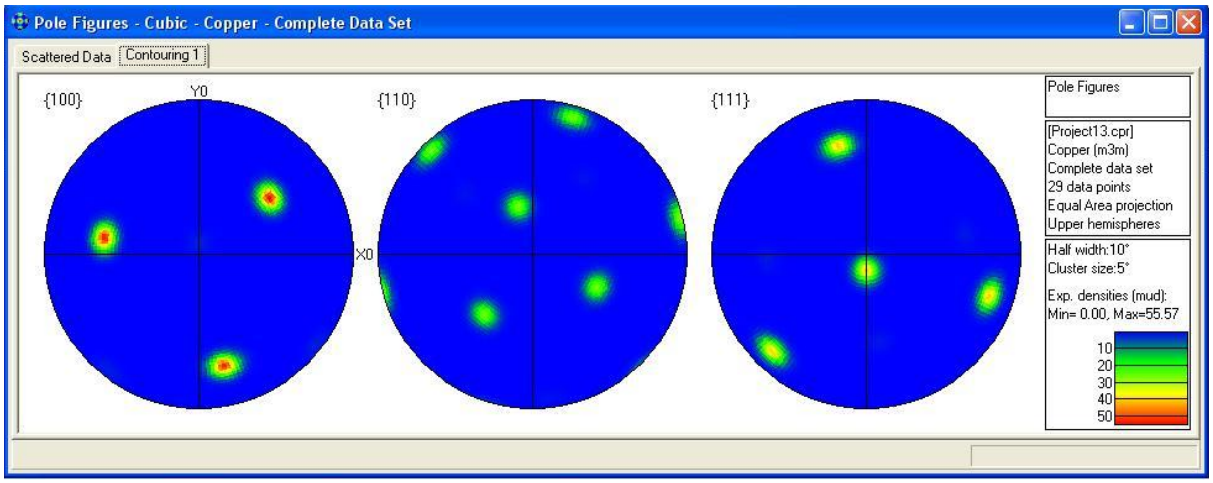


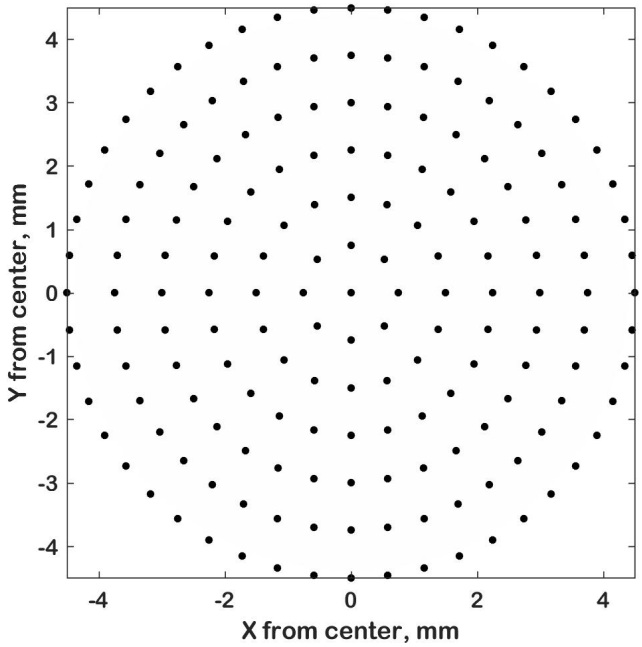
SI1: Illustration of the ideal structures of the chiral Cu(3,1,17)$^{R\&S}$ surfaces. The (3,1,17) surface is formed by (100) terraces separated by monoatomic (110) steps with (111) kinks. The convention for chirality is defined as *S*- or *R*-, if the order of rotation going from (111) → (100) → (110) is counterclockwise or clockwise, respectively.



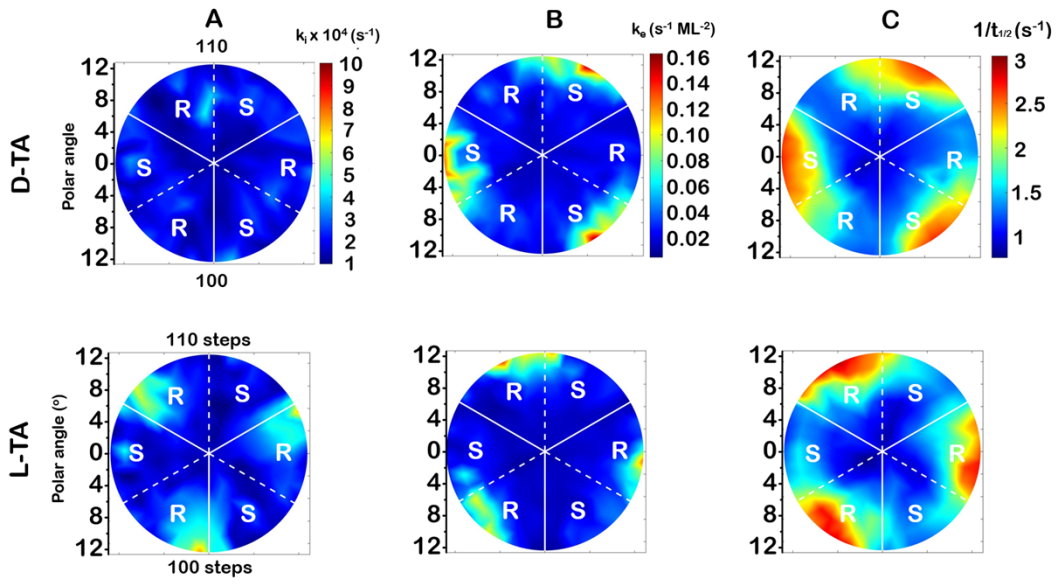
SI2: The stereographic triangle for a FCC lattice is a 2D map of possible surface orientations. The vertices represent the high symmetry achiral low Miller index planes: (111), (100), and (110). The edges of the triangle represent surfaces having low Miller index terraces separated by straight monoatomic steps formed by low Miller index microfacets. Points inside the triangle represent low-symmetry, chiral surfaces with structures based on terraces, steps and kinks formed by all three low Miller index microfacets. These surface structures such as (531) lack mirror plane symmetry.



SI3: Pole figures obtained from electron backscatter diffraction on the Cu(111)±14º-S[4]C. The {111} pole is located at the center point. The orientation of the bulk lattice is given by the orientation of the diffraction spots from the {100} and {110} planes.



SI4. Polar grid of 169 points used to determine the coverages of TA. The local coverage was estimated from the O 1*s* XPS signal.



SI5: Polar maps of A) $k_i^{(hkl)}$, B) $k_e^{(hkl)}$, and C) $t_{1/2}^{-1}$ for D-TA and L-TA decomposition measured at $T_{iso} =$ 433 K across the Cu(111)±14°-S[4]C. The dashed white lines indicate directions exposing (110) steps and solid white lines indicate (100) steps. These maps have not been rotationally averaged to conform to the 3-fold rotational symmetry of the Cu(111) surface.