Supporting information

Twin Structures in CuO Nanowires

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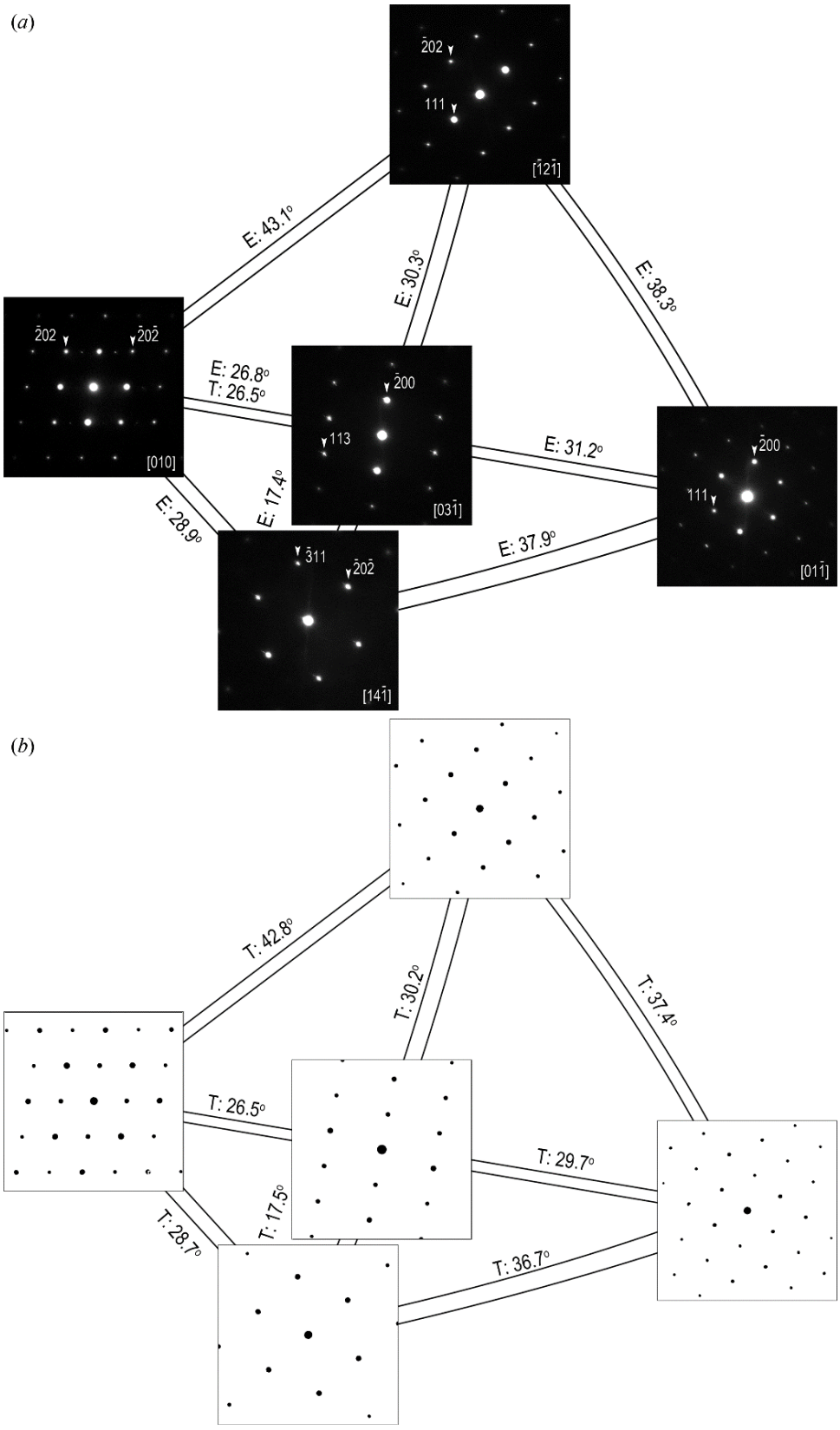

Figure S1 (*a*) Serial experimental SAED patterns acquired form a single crystal CuO NW. (*b*) Simulated SAED patterns along the corresponding zone axes. The experimental and theoretical angles between two adjacent zone axes were labelled as "E: degree" and "T: degree", respectively.

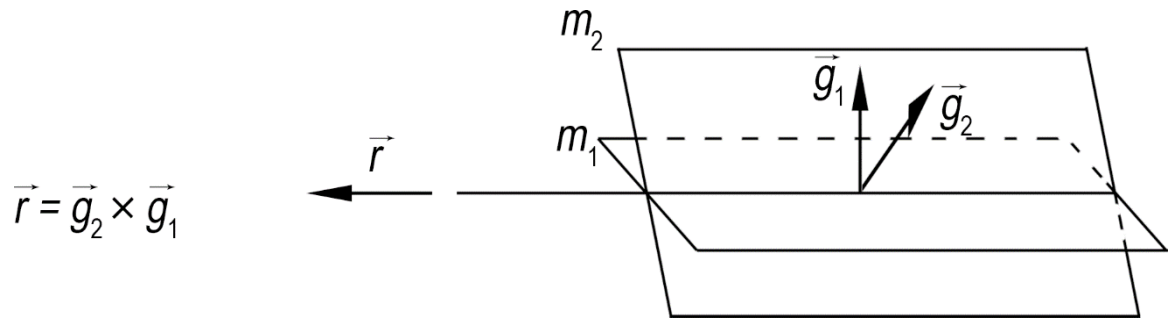

Figure S2 Schematic illustration of determining the growth direction of NWs. $\overrightarrow{g_1}$ and $\overrightarrow{g_2}$ represent two reciprocal vectors perpendicular to the NW side-edge (axial direction), and $\vec{r}$ indicates the growth (axial) direction of the NW.

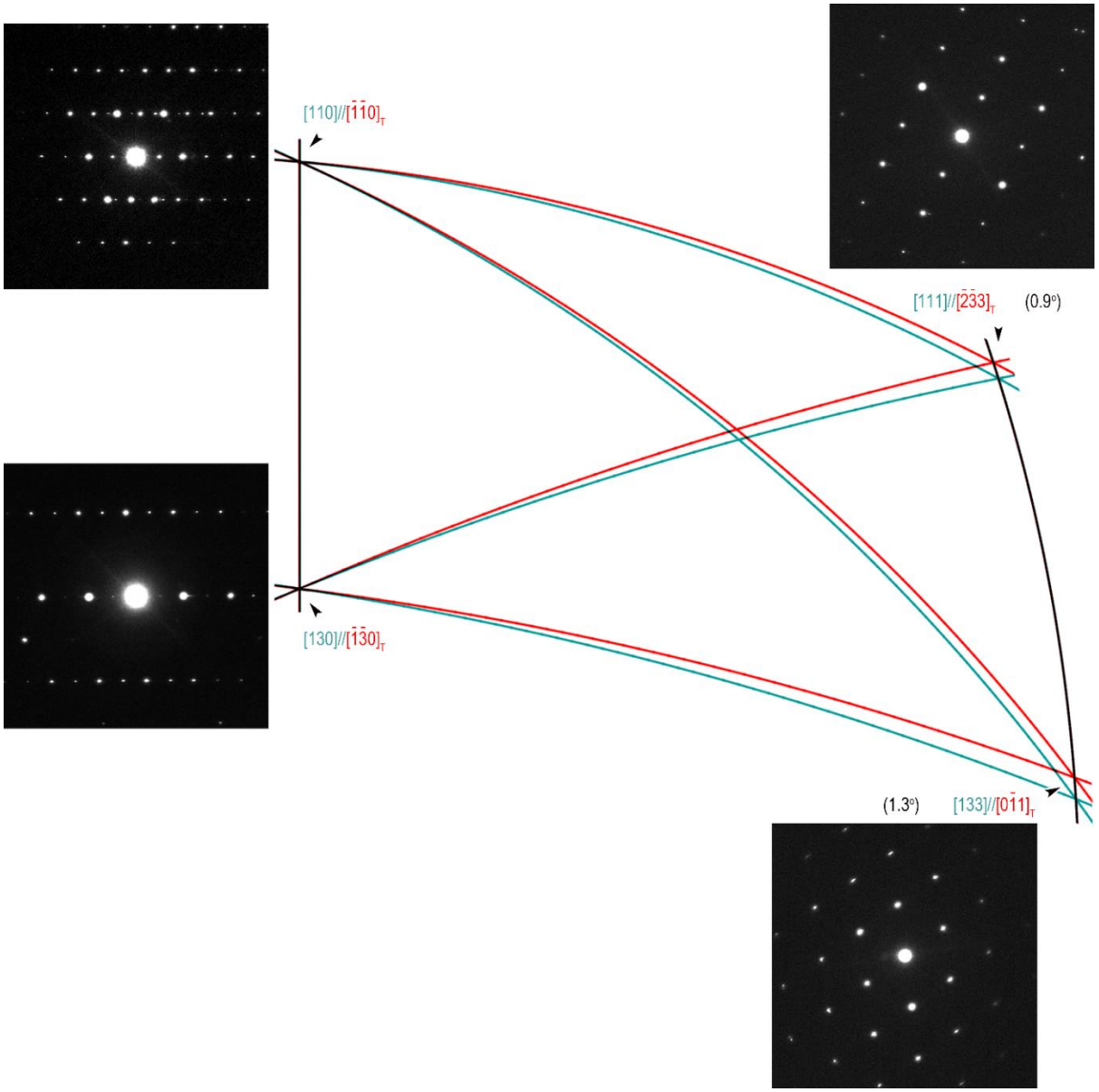

Figure S3 Serial experimental SAED patterns of (002) twinned CuO NW.

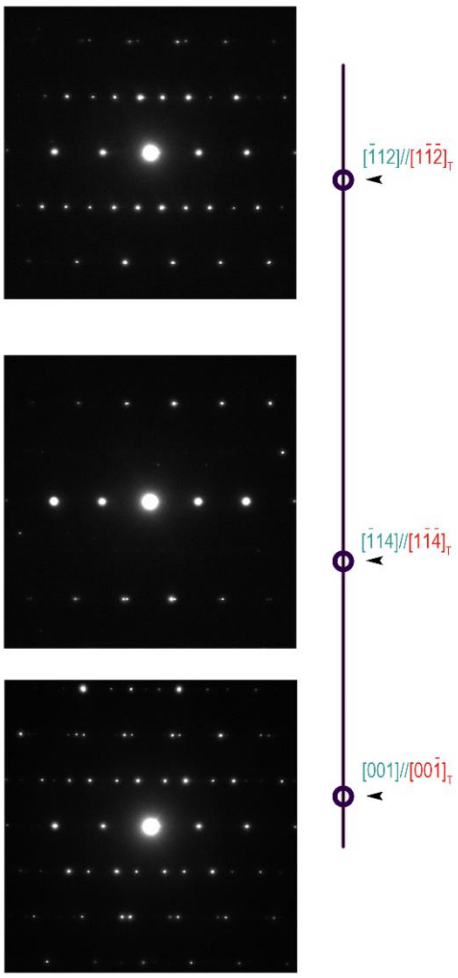

Figure S4 Serial experimental SAED patterns of (110) twinned CuO NW.

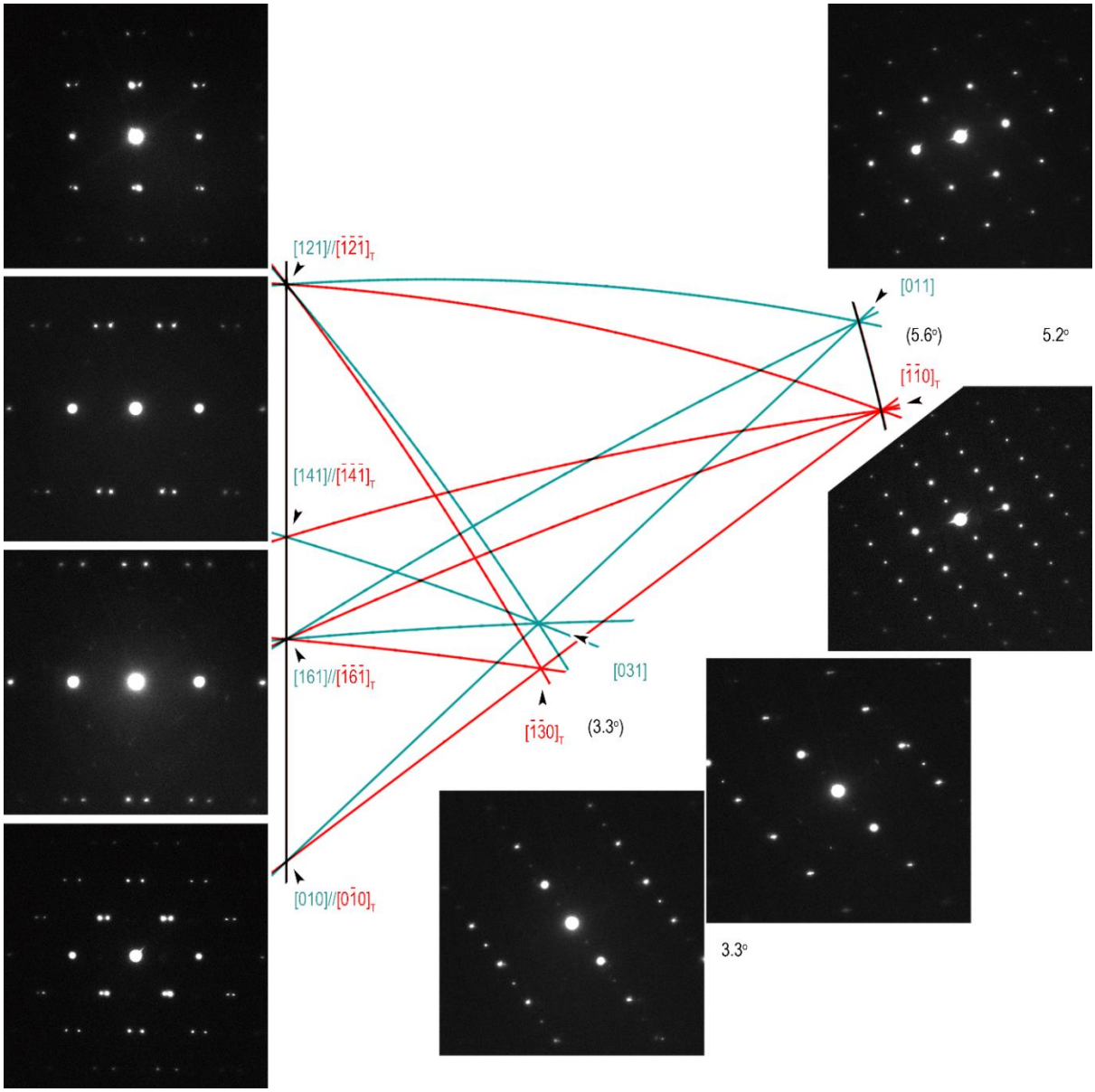

Figure S5 Serial experimental SAED patterns of $(20\bar{2})$ twinned CuO NW.

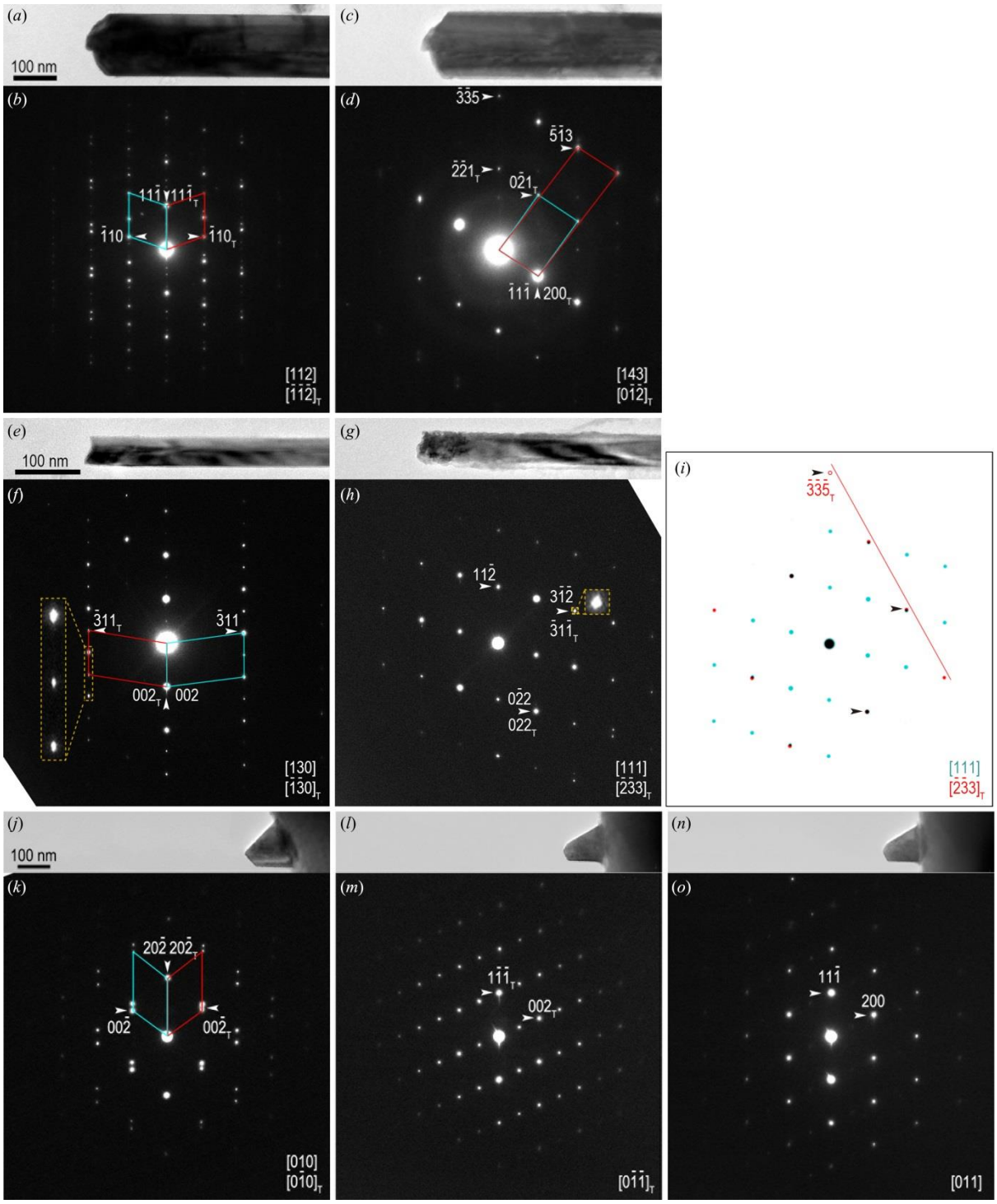

Figure S6 SAED patterns and corresponding BF images demonstrating the growth directions of bicrystal NWs. The (*a*)-(*d*) $(11\bar{1})$ and (*e*)-(*i*) (002) twinned NWs grew along <110>, while the (*j*)-(*o*) $(20\bar{2})$ twinned NW grew along <101>. (*i*) The simulated SAED pattern showed in (*h*) for better understanding. The cyan and red dots in represent the diffractions from [111] and $[\bar{2}\bar{3}3]_T$ zone axes, respectively.