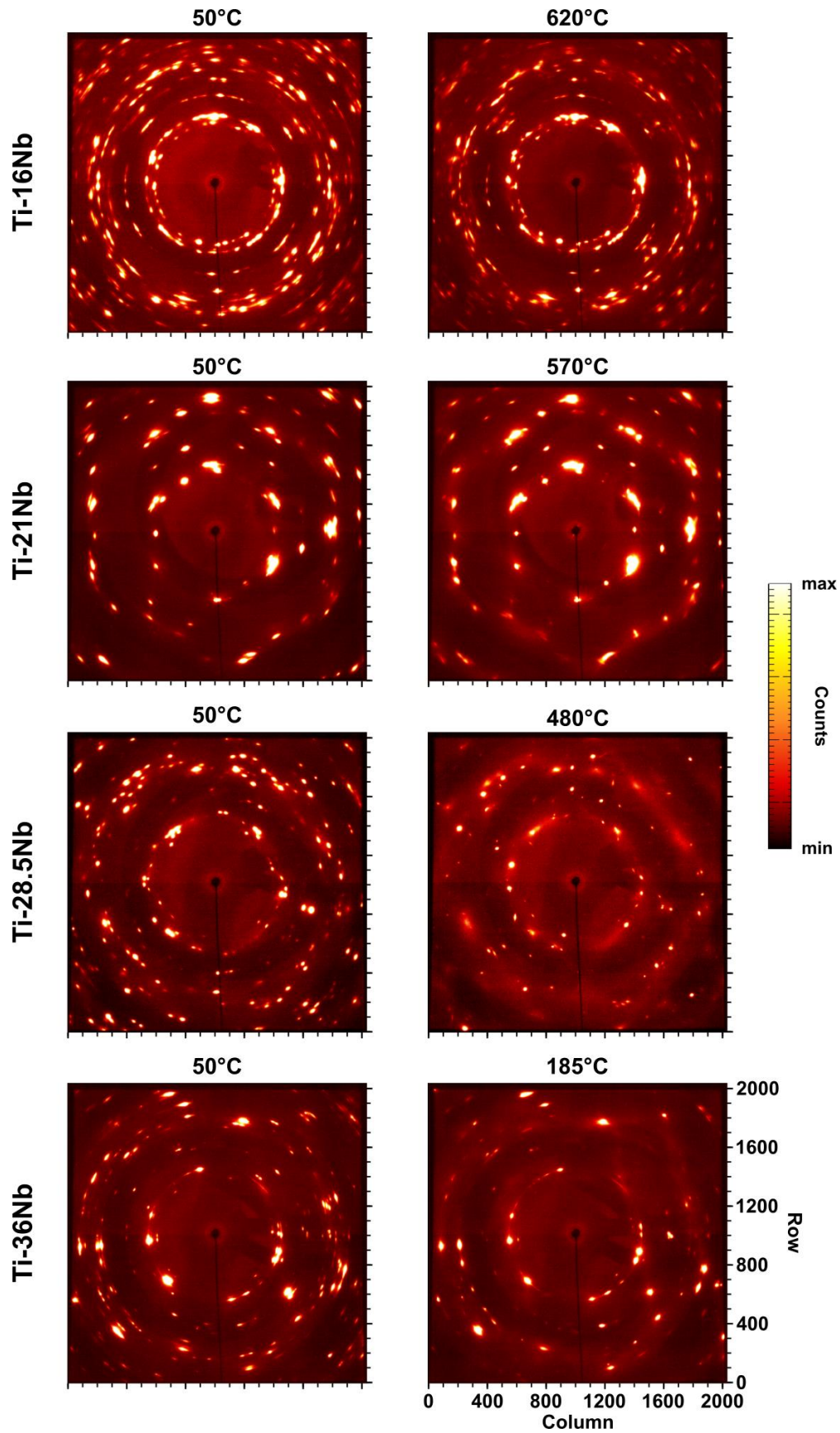




Supplementary Figure 1: Raw untreated 2-dimensional diffraction patterns showing the entire detector area. For each alloy the image in the left column corresponds to the initial state at 50°C. The images in the right column correspond to decomposition of α'' martensite for Ti-16Nb and Ti-21Nb, to α''_{iso} formation for Ti-28.5Nb and to reversion of α'' martensite for Ti-36Nb.