Supplementary Material

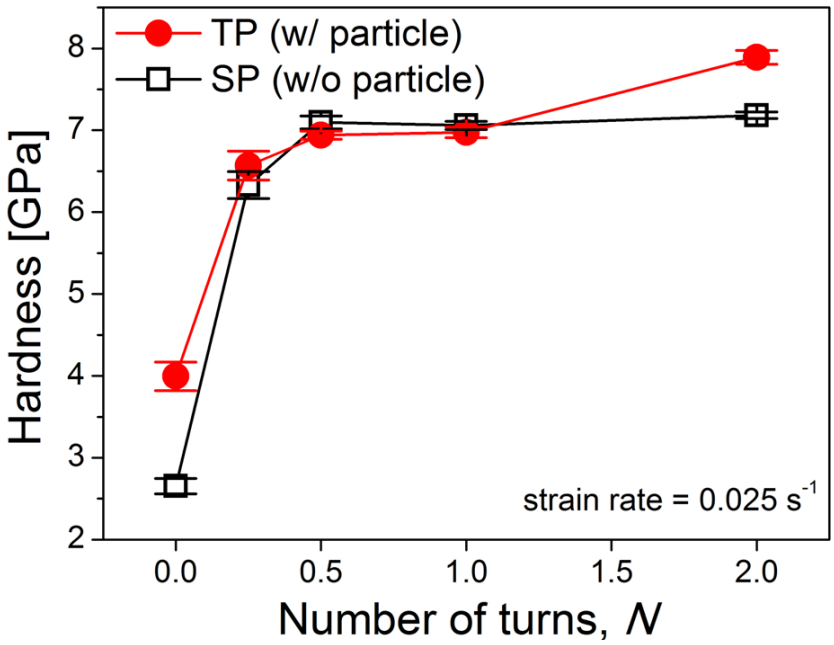

Fig. S1. Variations in nanoindentation hardness *H* as a function of *N*: If particle strengthening effect is insignificant in the HPT processed TP alloys (as in the suggested scenario of the text), why is then the average *H* value for $N = 2$ in this figure higher in TP alloy than in SP alloy? This difference in *H* may be simply attributed to the difference in average grain size (*d* ~24 and ~39 nm for TP and SP alloy, respectively).

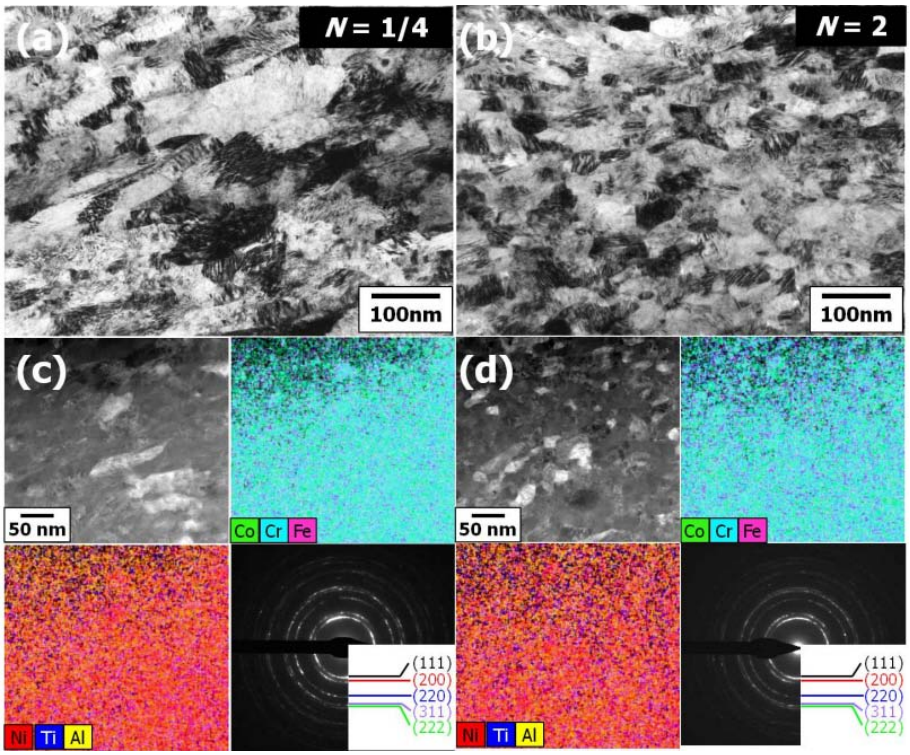

Fig. S2 Representative BF TEM images of HPT-processed SP alloy taken at the edges of the HPT disks after (a) N = 1/4 and (b) 2 turns. STEM image, corresponding elemental distribution maps and SAD patterns are given in (c) and (d) for 1/4 and 2 turns, respectively.