## Supplementary Material

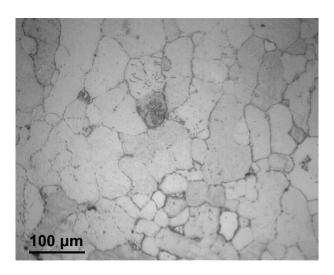


Fig. S1. Representative optical micrograph of the examined Ni-49.1Ni alloy.

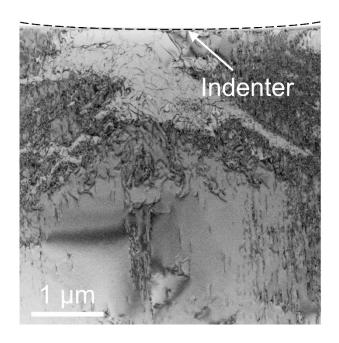


Fig. S2. TEM image for the microstructure of the region underneath the indenter (for R = 11.51  $\mu m$ ,  $P_{max} = 70$  mN, dP/dt = 2 mN/s), which was taken for comparing with Fig. 2c.