

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: APT three-dimensional reconstruction from analysis of nc-Cu composite (0.8 vol.% C). The threshold for the iso-composition surface is 0.25 at.% C.

File Name: Supplementary Movie 2

Description: *In situ* SEM tensile test of nc-Cu composite (0.8 vol.% C). The video is accelerated by ten times.

File Name: Supplementary Movie 3

Description: *In situ* SEM tensile test of pure nc-Cu. The video is accelerated by ten times.