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Supporting Information

for

Quantitative estimation of nanoparticle/substrate adhesion by atomic force microscopy

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AFM topography of manipulated Cu nanoparticles

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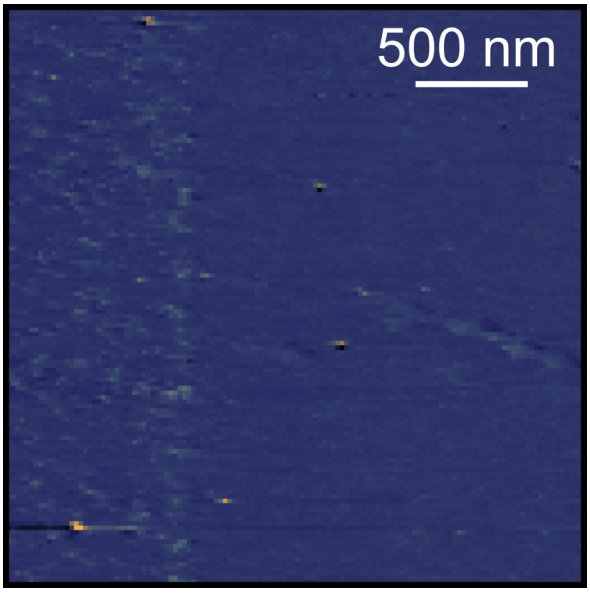

Figure S1: Cropped AFM topography image (5 × 5 μm^2) recorded on the same sample region as shown in Figure 2, *z*-scale of 14 nm. The image shows that displaced Cu NPs accumulate at the boundaries of the 1 × 1 μm^2 scan area used during manipulation. The central area corresponds to the effective pushing path of the AFM tip, while NPs outside this scan region remain in their initial positions.