

## Supporting information

### Current Transport Mechanism at Metal-Semiconductor Nanoscale Interfaces Based on Ultrahigh Density Arrays of *p*-type NiO Nano-Pillars

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#### SUPPORTING EXPERIMENTAL SECTION:

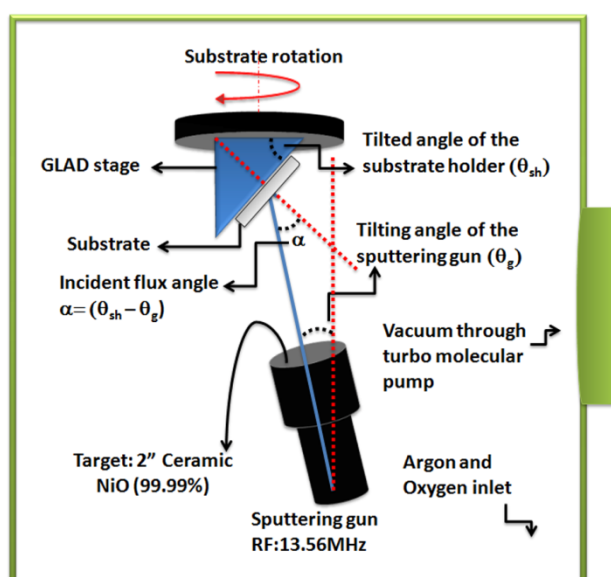
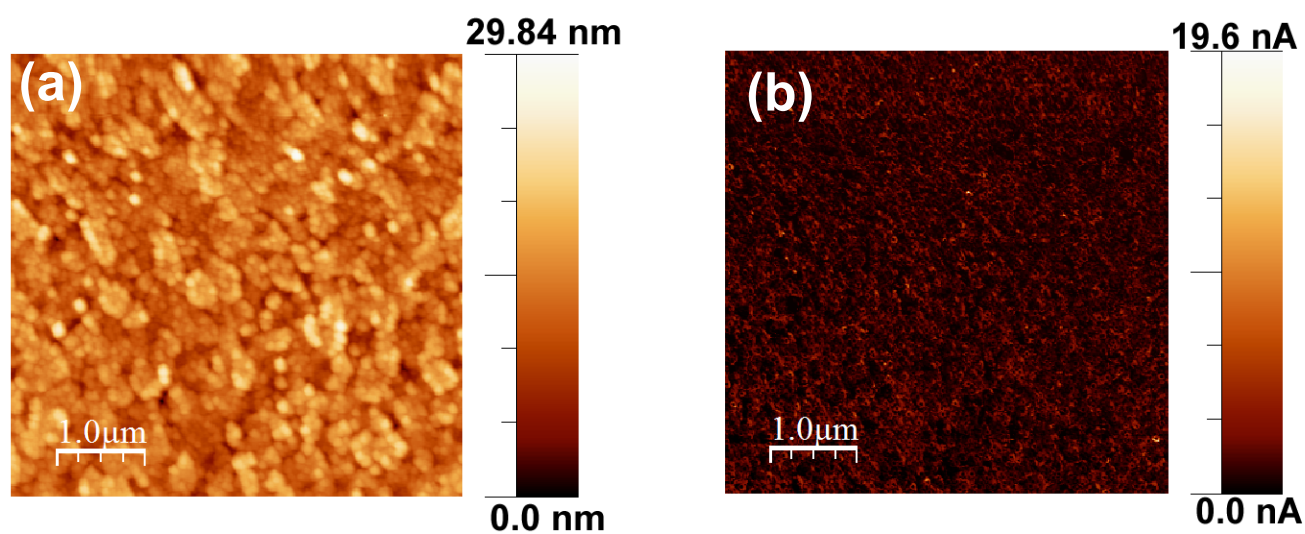
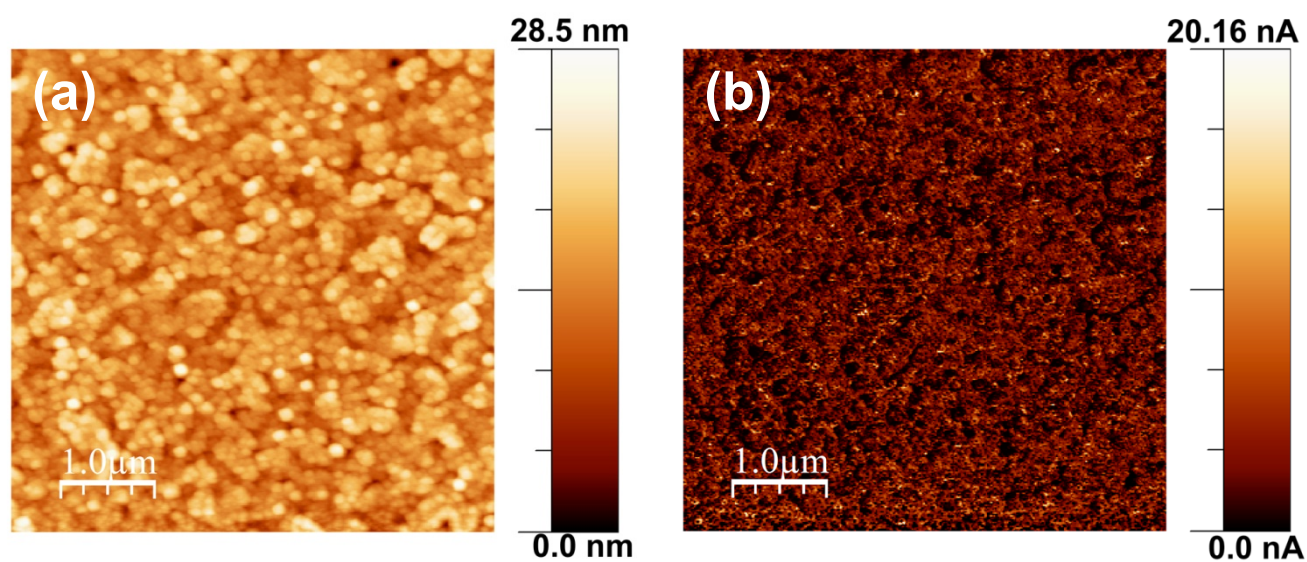


Fig. 1S Schematic diagram of GLAD technique in conventional RF sputtering unit.

**SUPPORTING AFM:**



**Fig. 2S**  $5\ \mu\text{m} \times 5\ \mu\text{m}$  (a) AFM and (b) c-AFM image of sample NG1 with +1.0 V bias



**Fig. 3S**  $5\ \mu\text{m} \times 5\ \mu\text{m}$  (a) AFM and (b) c-AFM image of sample NG2 with +0.5 V bias

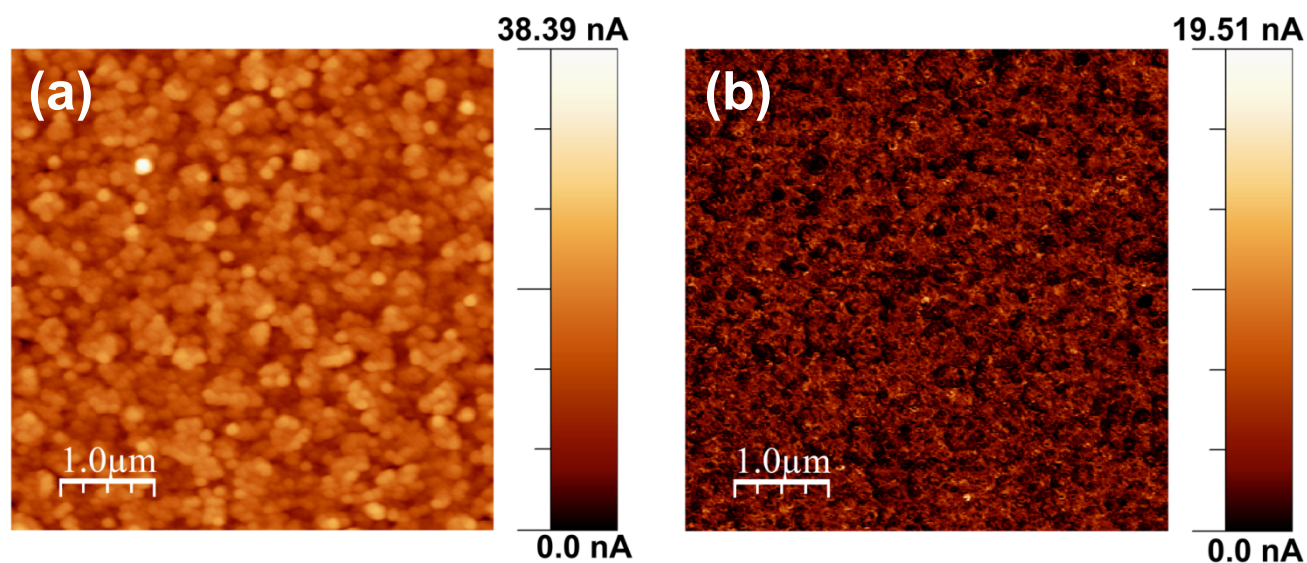


Fig. 4S  $5\ \mu\text{m} \times 5\ \mu\text{m}$  (a) AFM and (b) c-AFM image of sample NG3 with +0.25 V bias

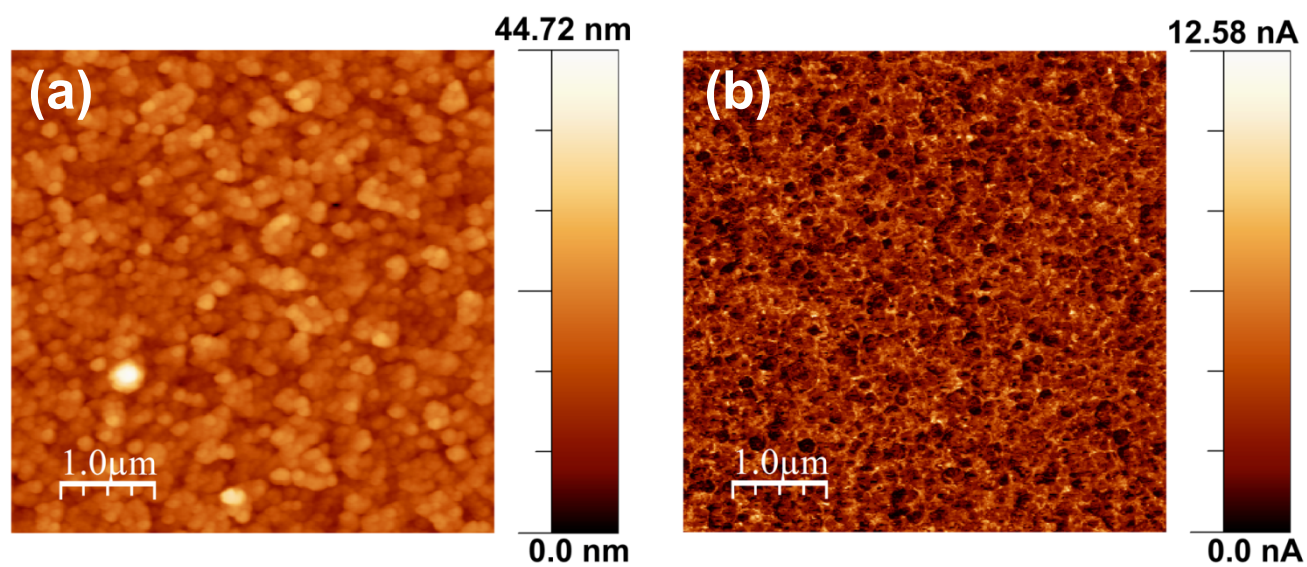
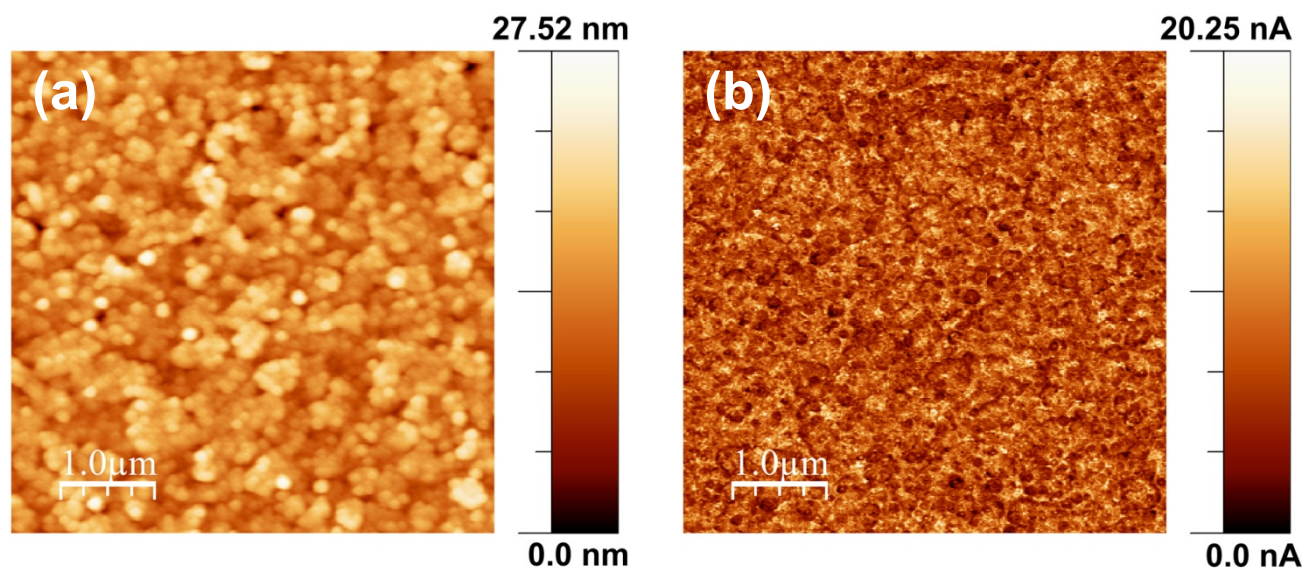
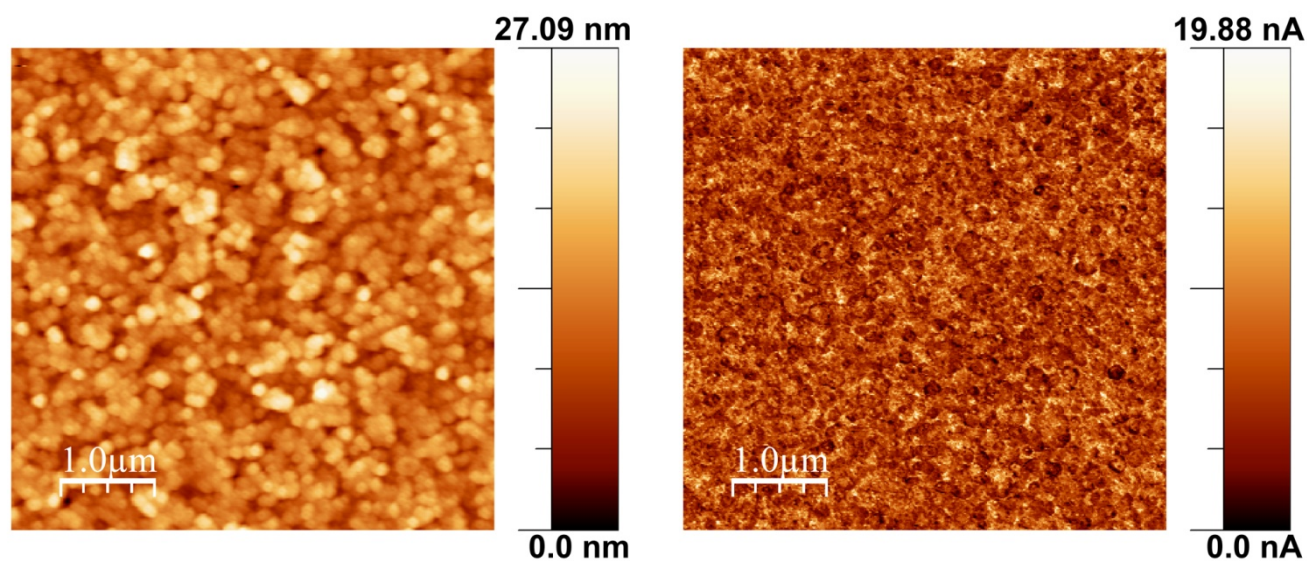


Fig. 5S  $5\ \mu\text{m} \times 5\ \mu\text{m}$  (a) AFM and (b) c-AFM image of sample NG4 with +0.25 V bias



**Fig. 6S**  $5\ \mu\text{m} \times 5\ \mu\text{m}$  (a) AFM and (b) c-AFM image of sample NG5 with +0.5 V bias



**Fig. 7S**  $5\ \mu\text{m} \times 5\ \mu\text{m}$  (a) AFM and (b) c-AFM image of sample NG6 with +0.5 V bias