

Supporting information

of

Control of Triboelectrification on Al-metal Surfaces through Microstructural Design

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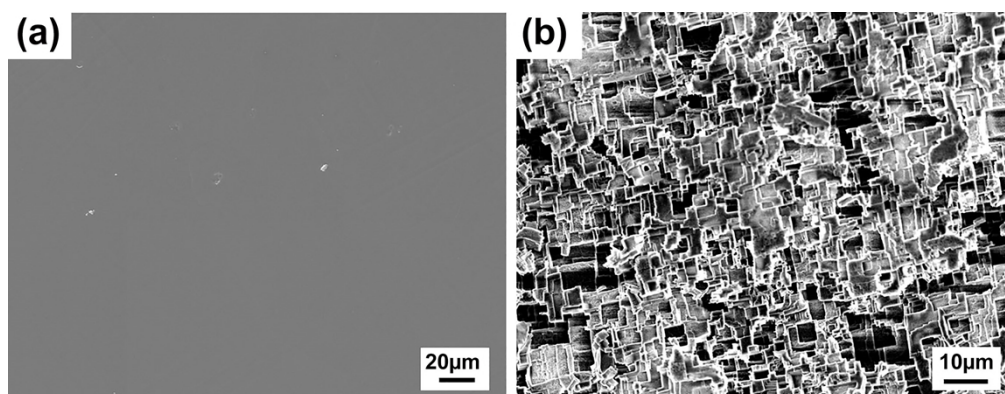


Fig. S1 Top-view scanning electron micrographs of (a) Smooth-Al and (b) Micro-Al after calcining at 200 °C for 1 h in a muffle furnace, the resulting materials being denoted as Smooth-Al₂O₃ and Micro-Al₂O₃, respectively.

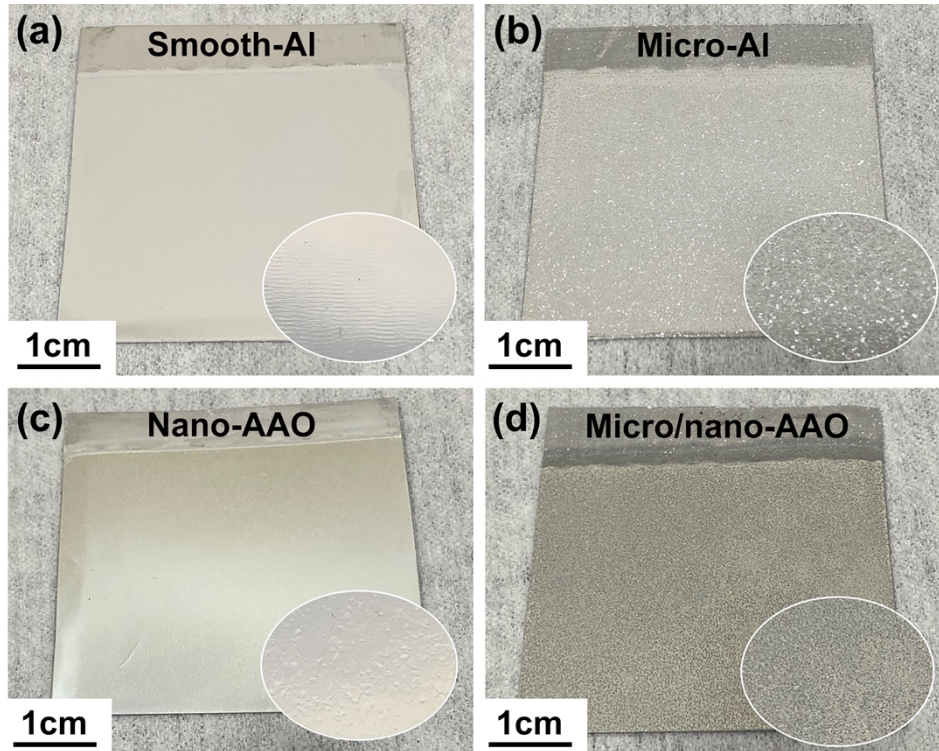


Fig. S2 Photographic images of (a) ultra-smooth Al (Smooth-Al), (b) hierarchical Al (Micro-Al), (c) nanoporous anodic aluminum oxide (Nano-AAO), and (d) hierarchical nanoporous anodic aluminum oxide (Micro/nano-AAO).

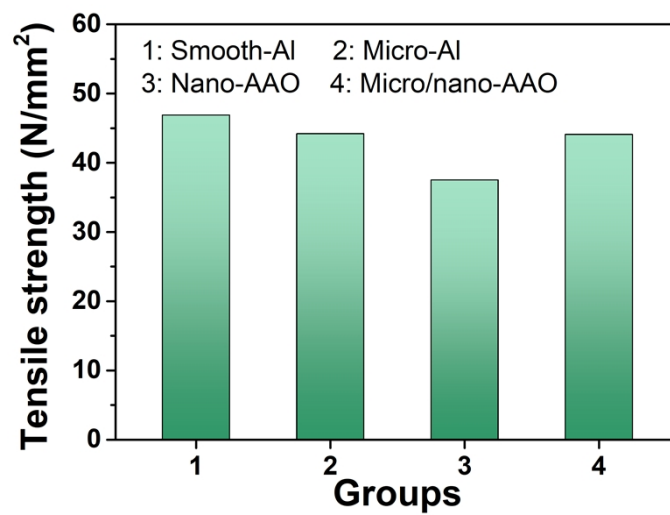


Fig. S3 Tensile strength of Smooth-Al, Micro-Al, Nano-AAO and Micro/nano-AAO, respectively.

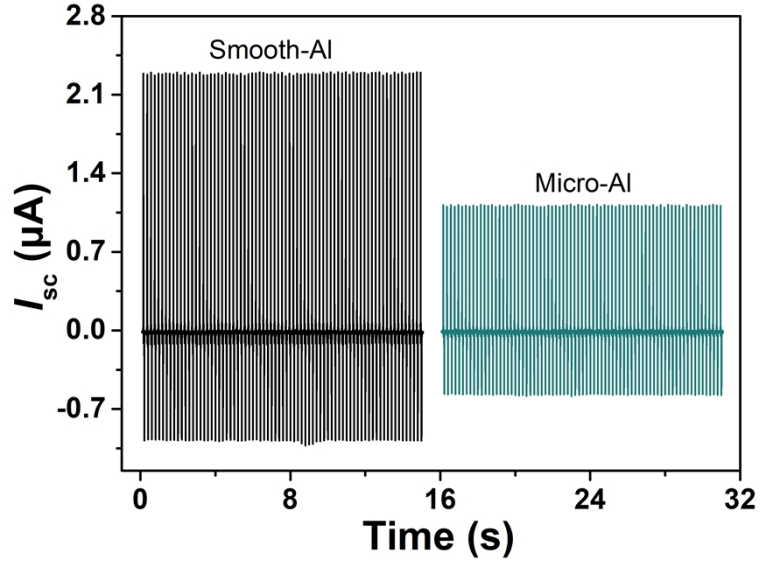


Fig. S4 The short-circuit current (I_{sc}) of ultra-smooth Al (Smooth-Al) (a), and hierarchical Al (Micro-Al) (b).

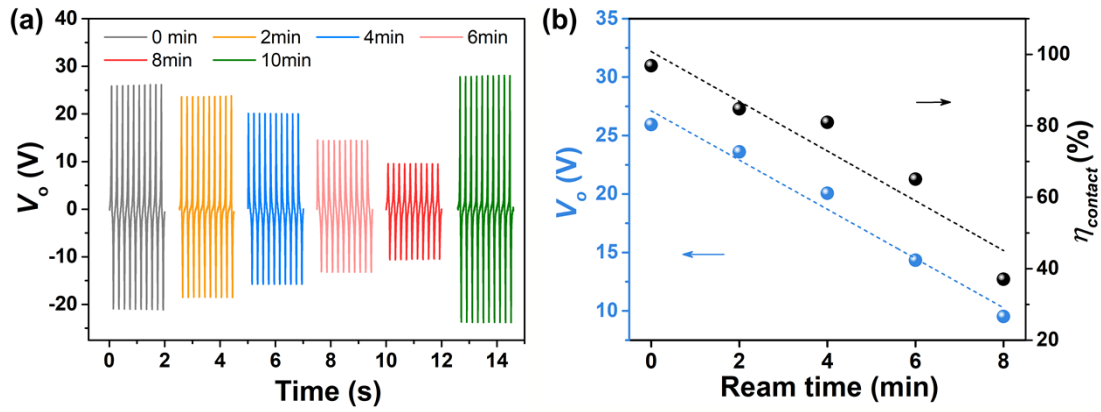


Fig. S5 (a) Output voltage (V_o), (b) V_o and contact efficiency ($\eta_{contact}$) of Nano-AAO with different reaming times from 0 min to 10 min.

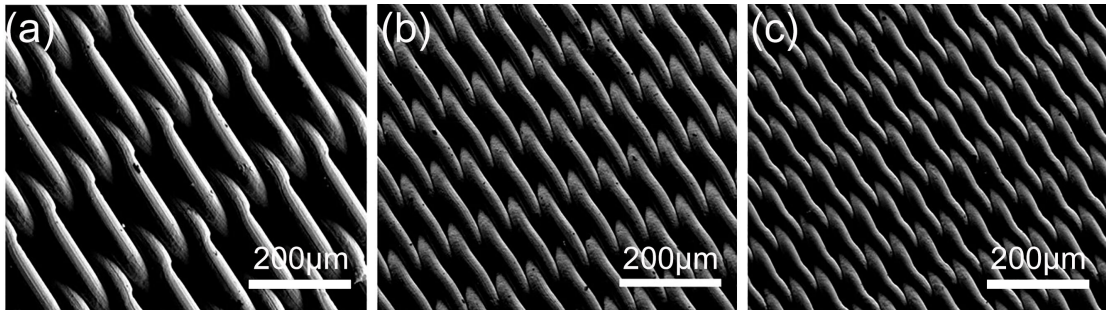


Fig. S6 Scanning electron micrographs of steel wire gauze with different mesh numbers, (a) 1000 mesh, (b) 1500 mesh, and (c) 2000 mesh.

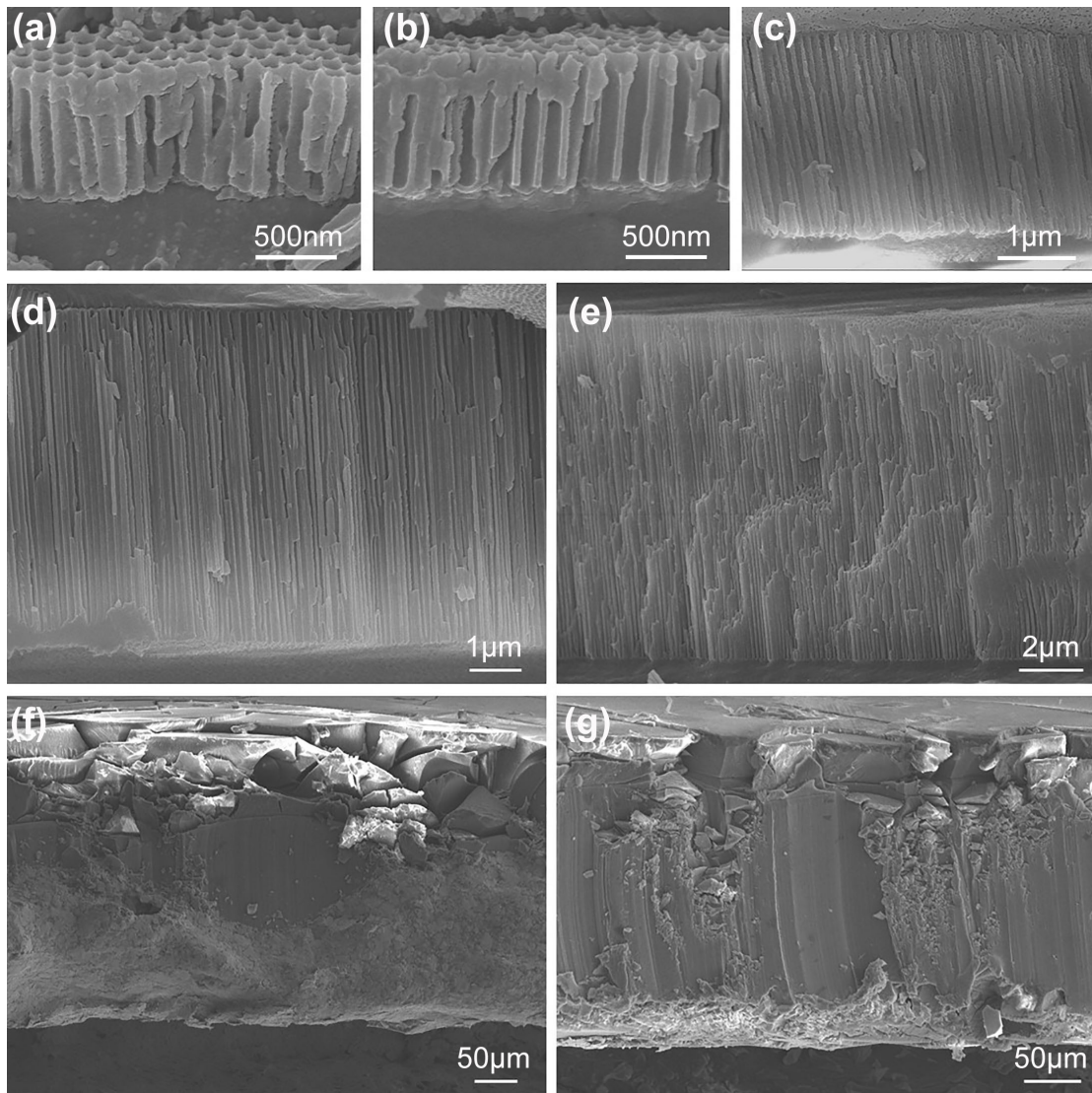


Fig. S7 Cross-sectional scanning electron micrographs of anodic aluminum oxide nanotubes with different oxidation times, (a) 5 min, (b) 10 min, (c) 30 min, (d) 60 min, (e) 120 min, (f) 300 min, and (g) 600 min.