

Figure S1. The sapphire sub-microstructure images with a cleaning time of 1 hour.

Although the debris on the surface of the sapphire micro/nanostructures has been cleaned, the nanostructures inside the microholes have not been fully exposed.

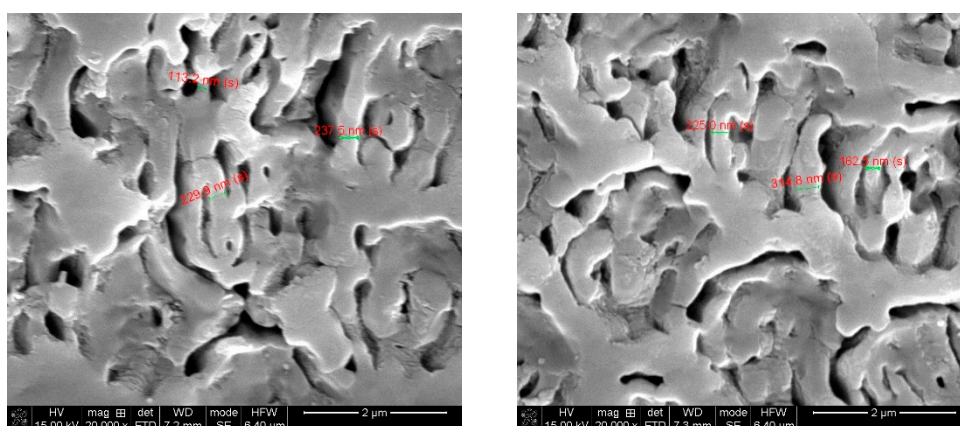


Figure S2. The minimum sub-microstructure within a microhole is 250 ± 20 nm or smaller.

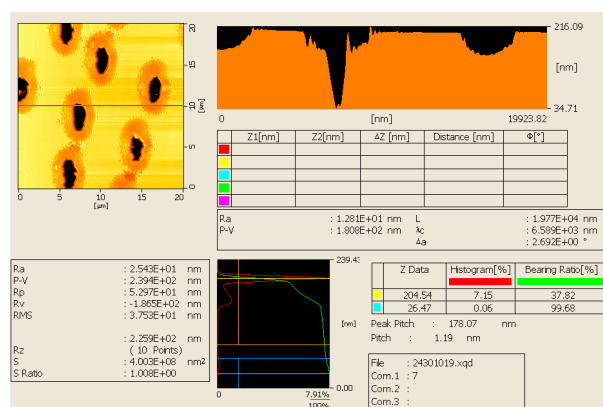


Figure S3. The roughness of the sapphire microholes structure is reduced to about 25 nm after hydrofluoric acid cleaning.

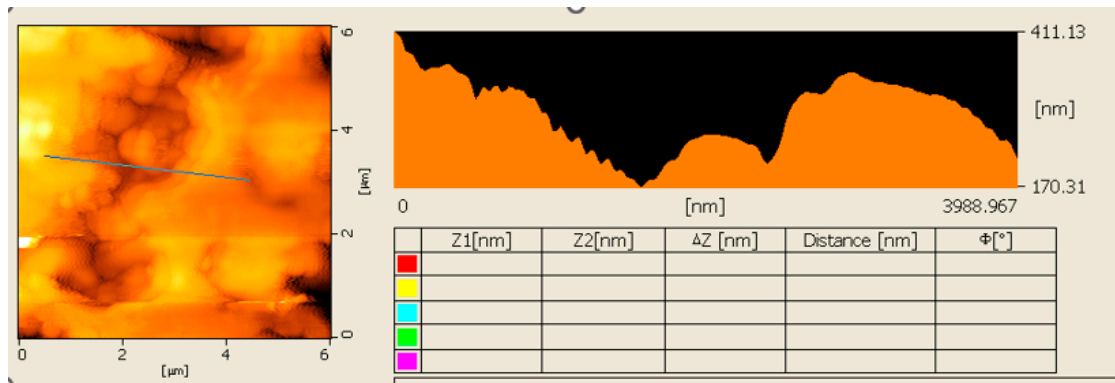


Figure S4. AFM map of sapphire sub-microstructure.