

## Supplementary information

### **Plasmonic nanopapers: flexible, stable and sensitive multiplex PUF tags for unclonable anti-counterfeiting applications**

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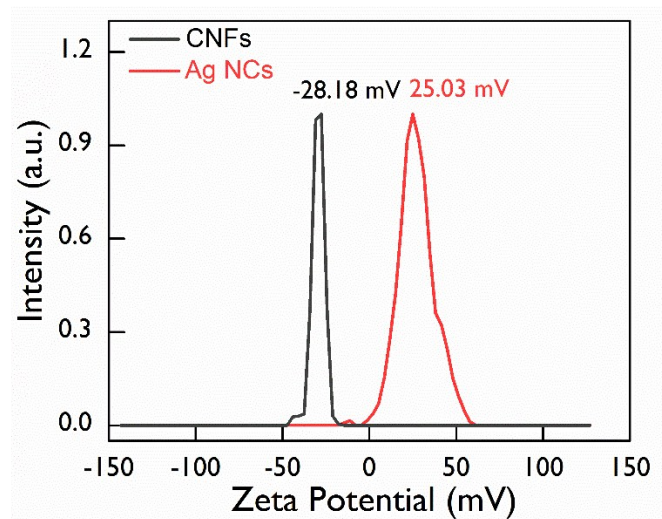
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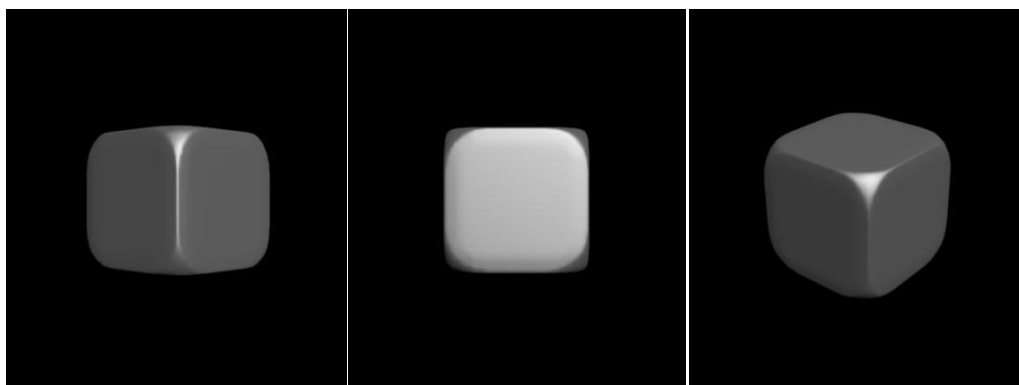
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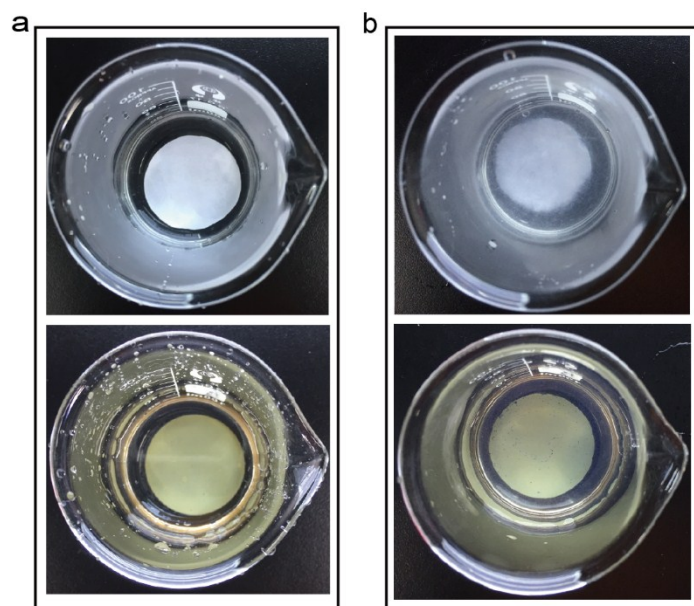
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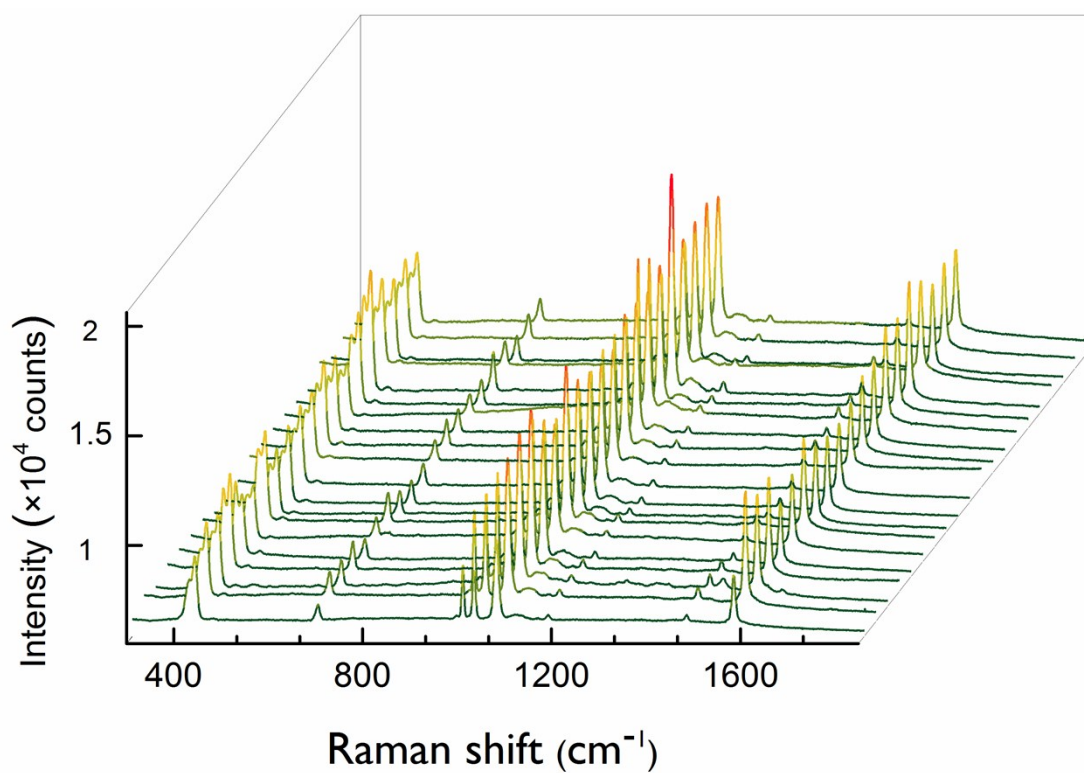
**Fig. S1.** Zeta potential of the building blocks: AgNCs (red curve) and CNFs (black curve).



**Fig. S2.** Three the most common shapes of cubes with different orientations.



**Fig. S3.** The plasmonic nanopaper and A4 paper with the ultrasonic-resistant experiment: (a) before and (b) after ultrasonication for 30 min with power of 400 W.



**Fig. S4.** Spot-to-spot SERS spectra of 1  $\mu\text{M}$  benzenethiol adsorbed on the plasmonic nanopaper.



**Fig. S5.** Photographs of the Lycurus Cup in reflected light (left) and transmitted light (right) (from.britishmuseum).