

## Supplementary Information

### **Fabrication of superhydrophobic Au-Zn alloys surface on zinc substrate for roll-down, self-cleaning and anti-corrosion properties**

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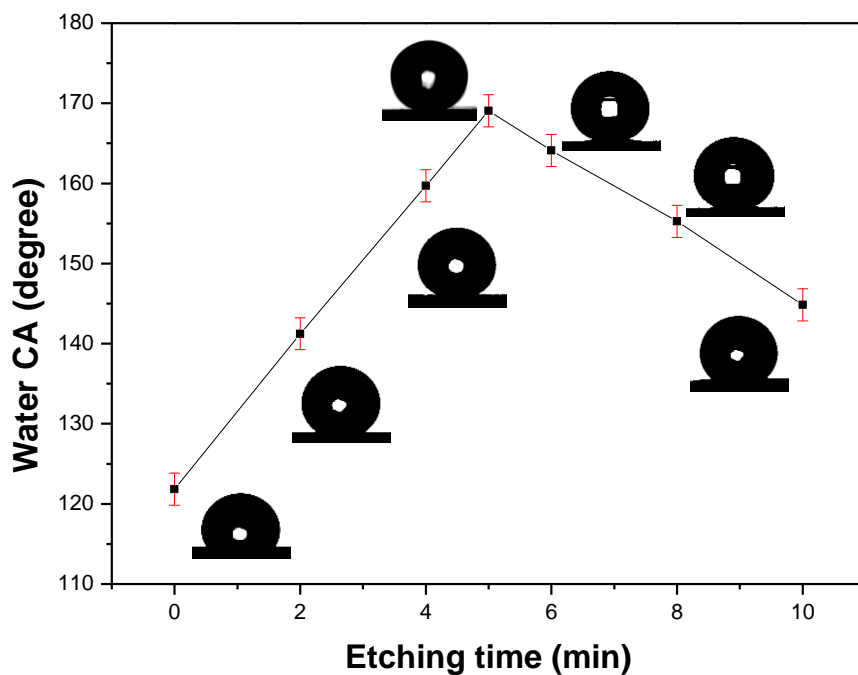
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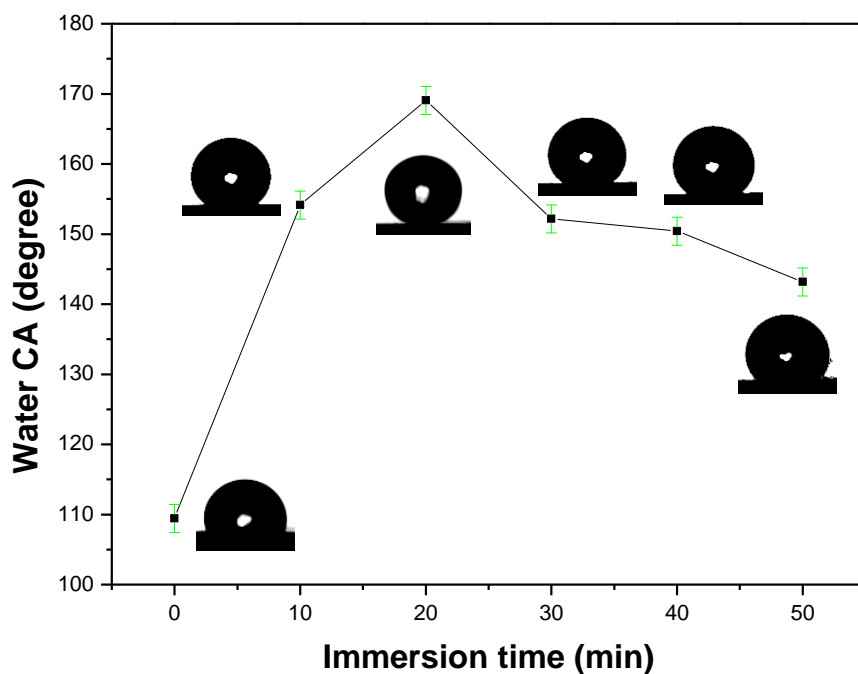
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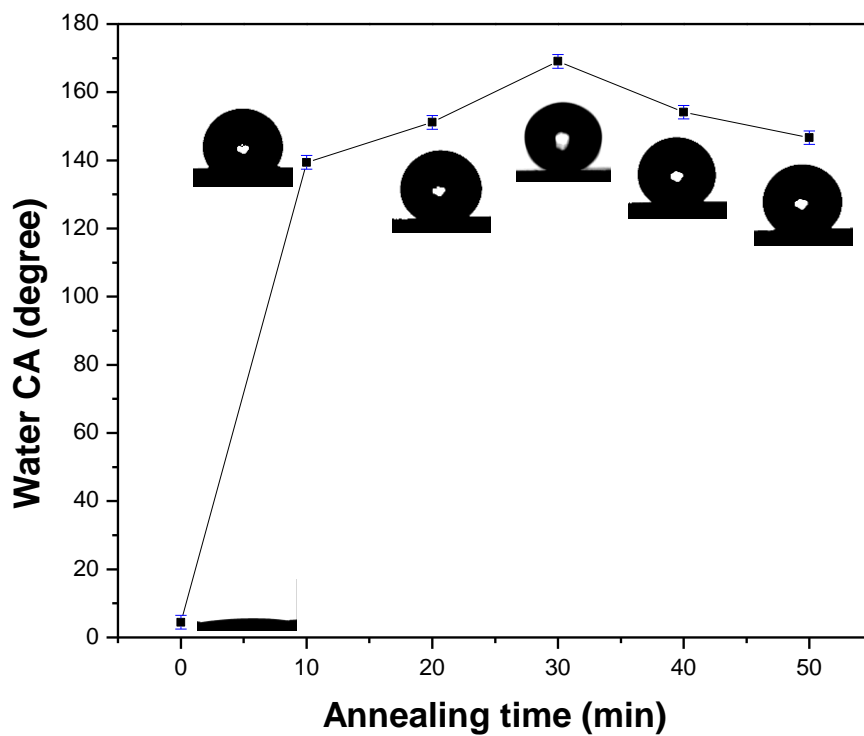
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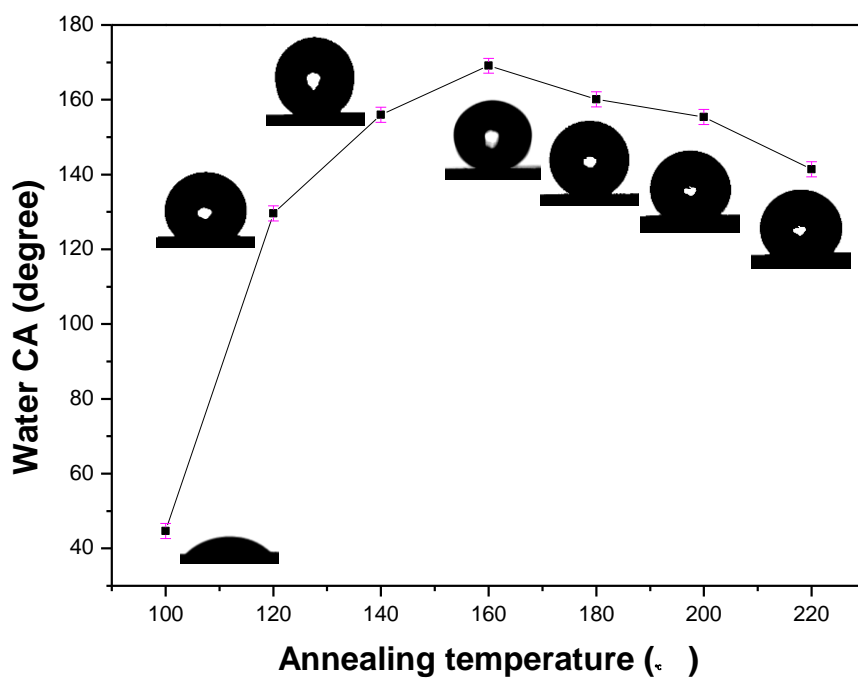
**Fig. S1.** Variation in the static WCAs of sample surfaces with different etching time, while immersed in 5 mmol/L H<sub>2</sub>AuCl<sub>4</sub> solution for 20 min and annealed in an oven at 160°C for 30 min.



**Fig. S2.** Variation in the static WCAs of sample surfaces with different immersion time, while etched with 1 mol/L NaOH solution for 5 min and annealed in an oven at 160°C for 30 min.



**Fig. S3.** Variation in the static WCAs of sample surfaces with different annealing time, while etched with 1 mol/L NaOH solution for 5 min, immersed in 5 mmol/L HAuCl<sub>4</sub> solution for 20 min and annealed in an oven at 160°C.



**Fig. S4.** Variation in the static WCAs of sample surfaces with different annealing

temperature, while etched with 1 mol/L NaOH solution for 5 min, immersed in 5 mmol/L HAuCl<sub>4</sub> solution for 20 min and annealed in an oven for 30 min.