Supporting Information for

A feasible approach to synthesize Cu_2O microcrystals and their enhanced non-enzymatic sensor performance

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S1

In the absence of KBr, the concave cubic shape formed at the 2nd min. This concave cubic shape was the final shape, which remains unchanged with the reaction time prolonged.

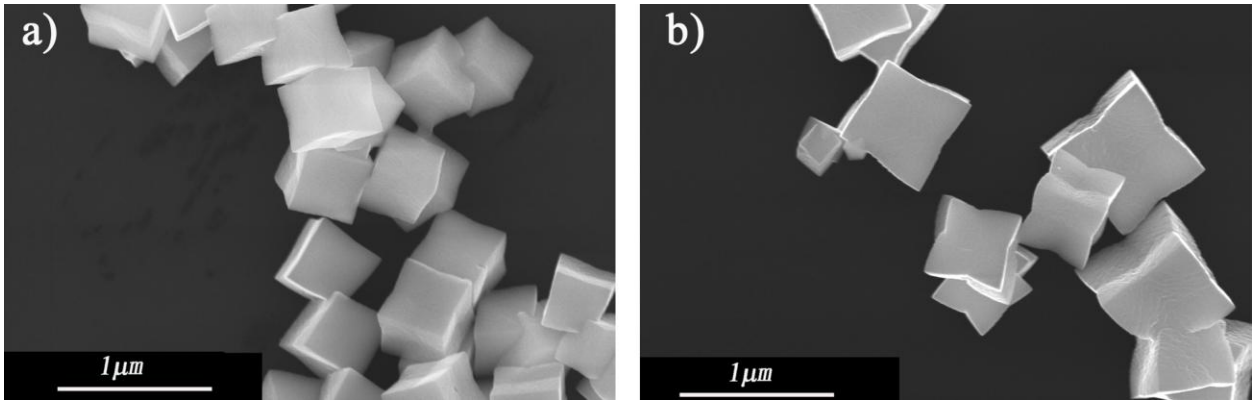

Figure S1. FESEM image of the concave cubic Cu_2O microcrystals formed at: a) 2 min; b) 4 min, when no additive was added.

S2

As displayed in the Figure S2, the ripening time of Cu_2O increase to 6 min when a small amount of KBr existed. According to the inset images, we can clearly find that the branch of Cu_2O microcrystal begin to appear at the 4th min. And the branch should be derived from the growth of the aggregated nanoparticles via the Ostwald ripening process.

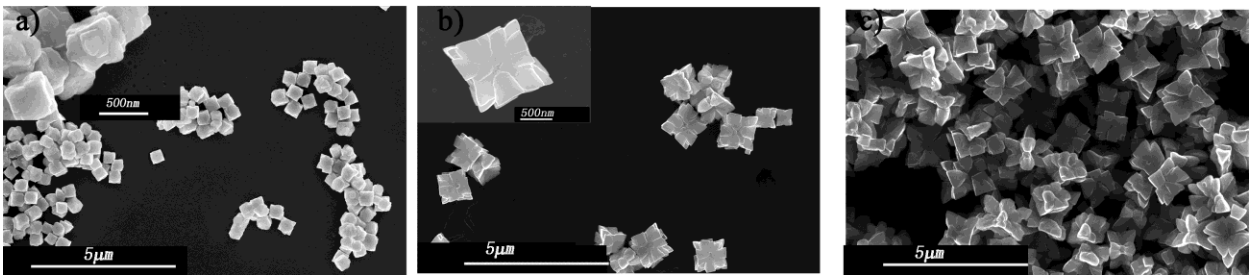

Figure S2. FESEM image of the multiple-branched Cu_2O microcrystals formed at: a) 2 min; b) 4 min; c) 6 min, when 0.5 g KBr was added as additive.

S3

As demonstrated in the Figure S3, each branch of the hexapod shape will not extended in the presence of 14.0 g KBr. Nevertheless, as the reaction time prolonged, the entire shape developed into a large one via the Ostwald ripening process. Here, the constant *C* equals to the length of b divided by a length.

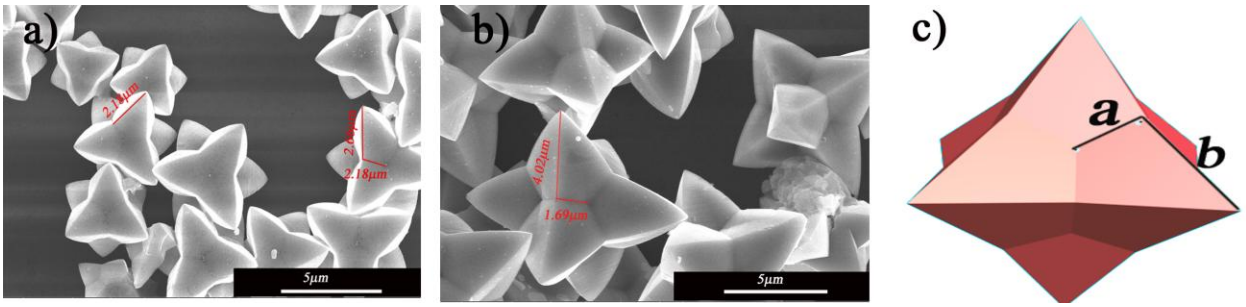

Figure S3. FESEM image of the short hexapod Cu_2O microcrystals formed at: a) 2 min; b) 8 min, when 14.0 g KBr was added as additive. c) The illustration model of *C*.

S4

Figure S4 displays the concave cubic Cu_2O microcrystals can be obtained in the condition that 5.0 g K_2SO_4 as the additive. And this morphology has no obvious change when compared with the image in Figure S1, illustrating that the main causes for the shape evolution of Cu_2O could be attributed to the bromide ions.

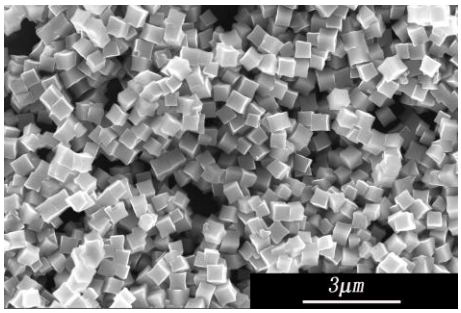

Figure S4: FESEM of the Cu_2O microcrystals that 5.0 g K_2SO_4 as the additive.

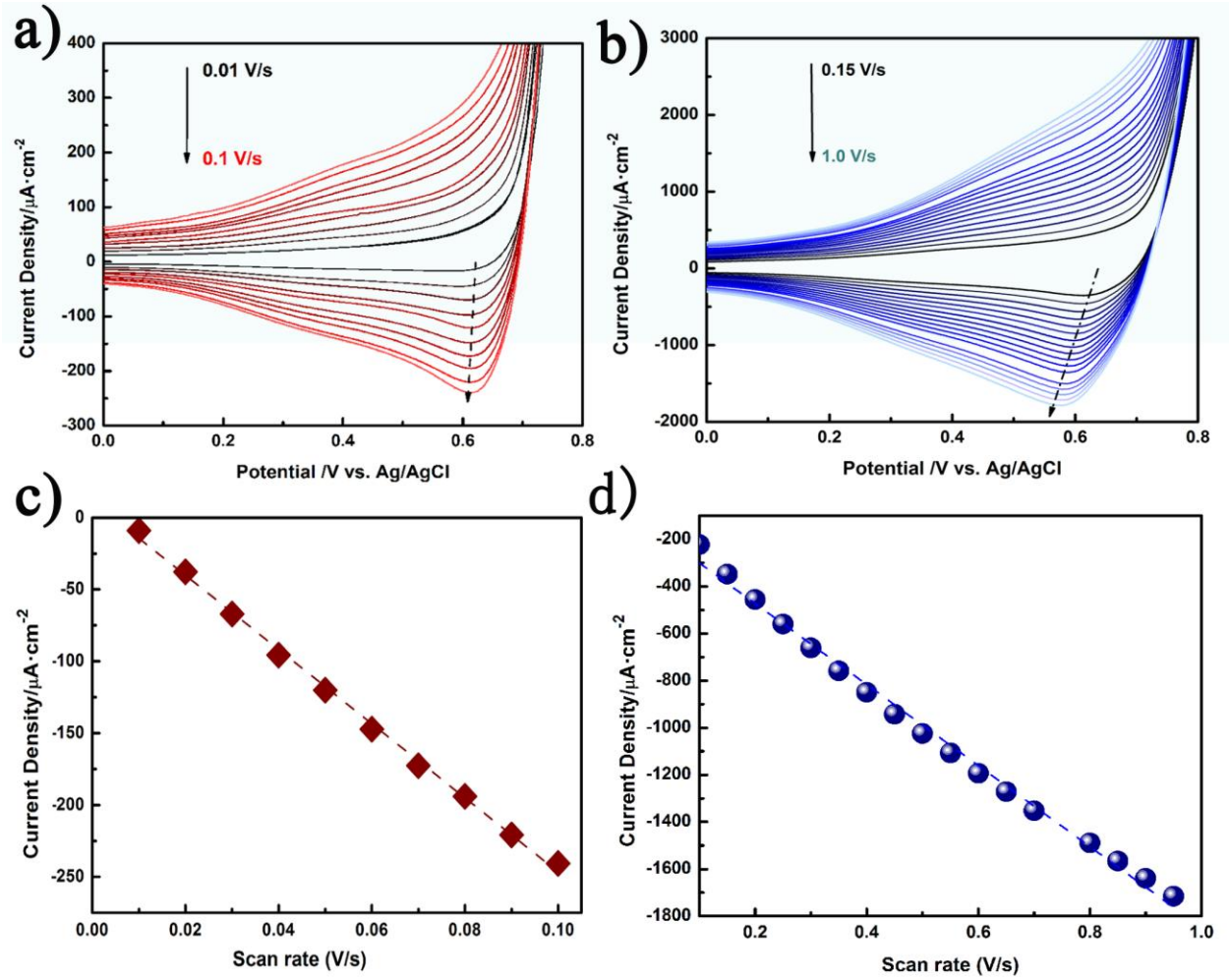

Figure S5. CVs of the Electrode C at different scan rates: a) 0.01 -0.1 V/s, b) 0.15 -1.0 V/s; c-d): current density for the reduction peak as a function of their corresponding potential scan rate.From the Figure S5, we can find that the currents density of reduction peak increased linearly with the scan rate, from 0.01 V/s to 1.0V/s, indicating that electron transfer of the Electrode C in the alkaline condition is controlled by surface adsorption.

Table S1. Summarize of the sensitivities (μA/mM cm^2) for each measurement.

		1	2	3	AVERAGE	STDEV
Sample	A	83	96	104	94.3	10.6
Sample	B	117.6	108	122.6	116.1	7.42
Sample	C	96	89	106	97	8.54
Sample	D	78	103	96	92.3	12.9

Table S2. Summarize of the detection ranges (mM) for each measurement.

		1	2	3	AVERAGE	STDEV
Sample	A	10.5	10.5	10	10.33	0.29
Sample	B	9.0	9.0	8	8.7	0.58
Sample	C	14.0	15.0	14.0	14.3	0.58
Sample	D	10.5	10.5	11	10.6	0.29

S6:

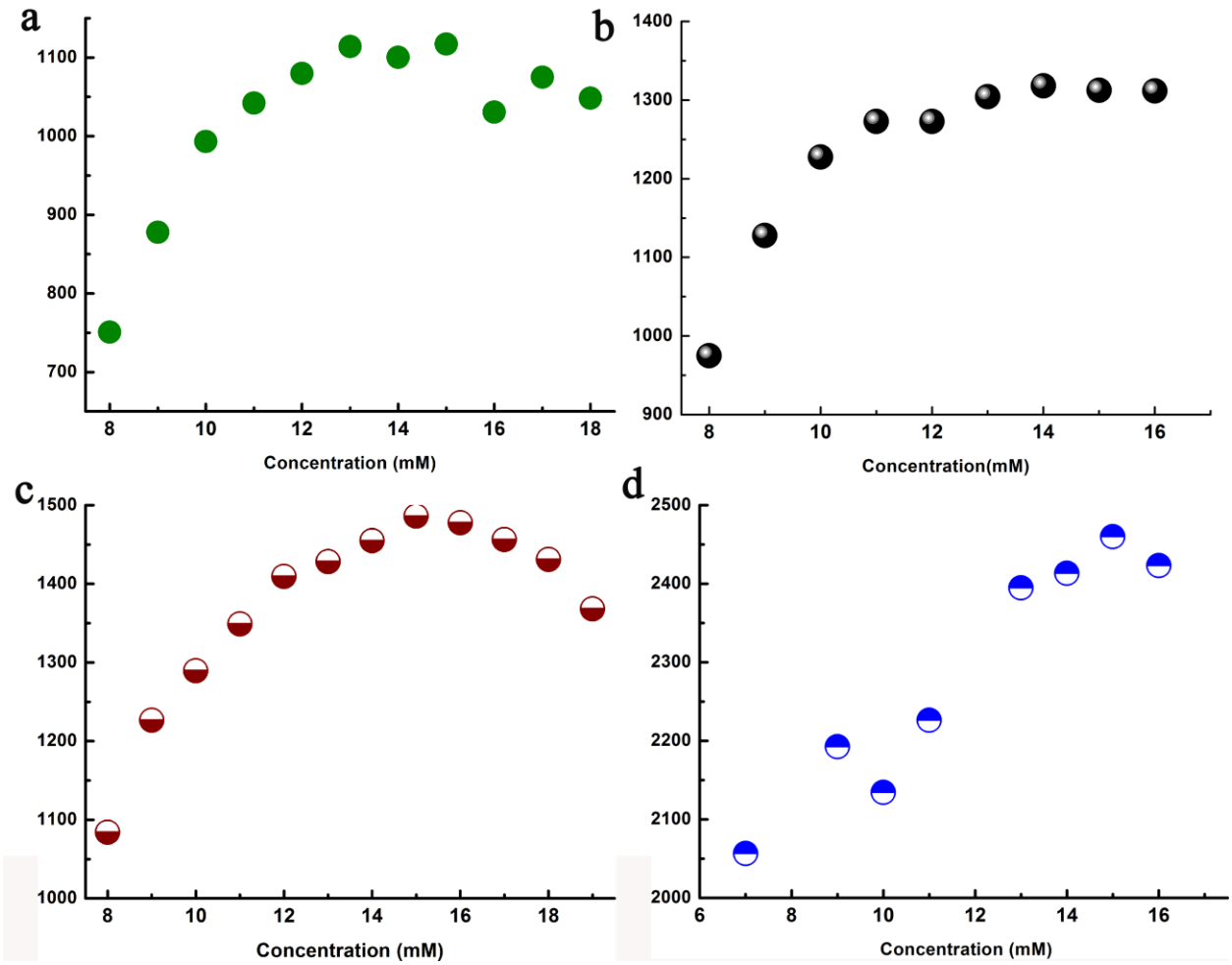

Figure S6: High resolution of the insets in Figure 4.

S7:

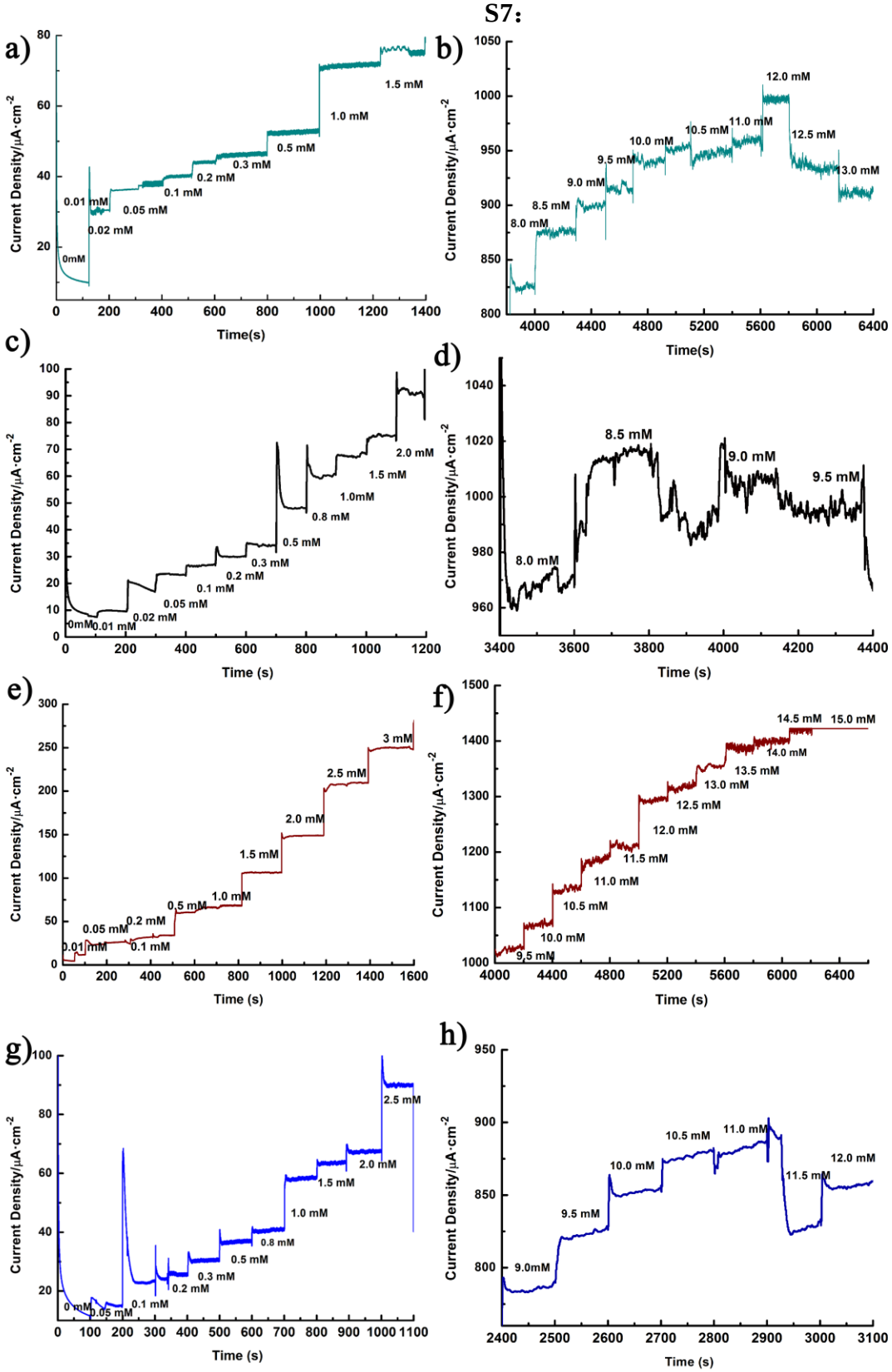

Figure S7: High resolution of the insets in Figure 5.

S8:

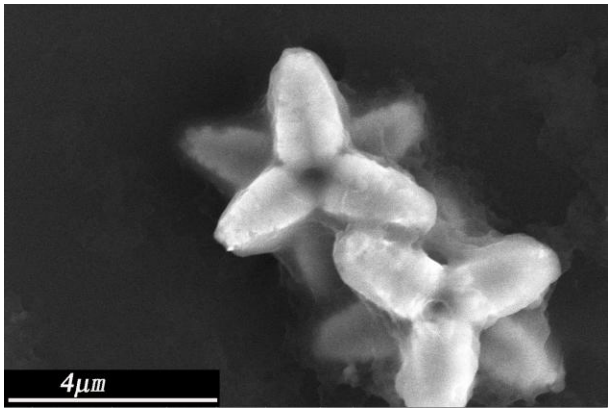

Figure S8. A typical FESEM image of the Cu_2O microcrystals rinsed from the electrode modified by Sample C after the glucose detection.

S9:

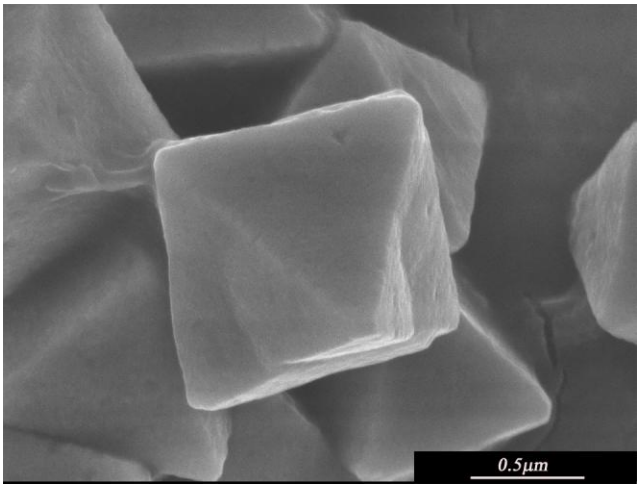

Figure S9. FESEM image of the obtained Cu_2O microcrystals by using PVP as the surfactant.

S10

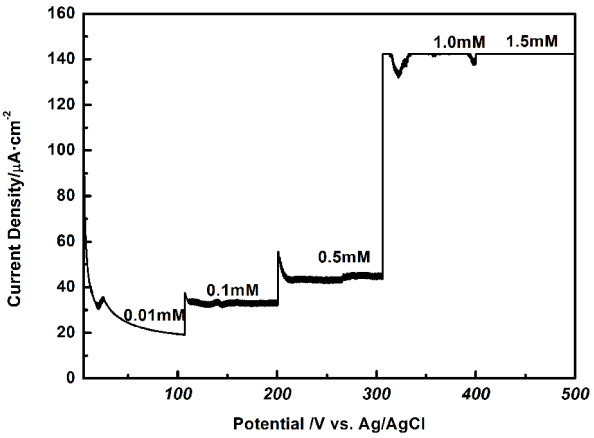

Figure S10. Amperometric responses of the present electrode modified by Sample E, which at potential of +0.6 V with increase the concentration of glucose.

S11:

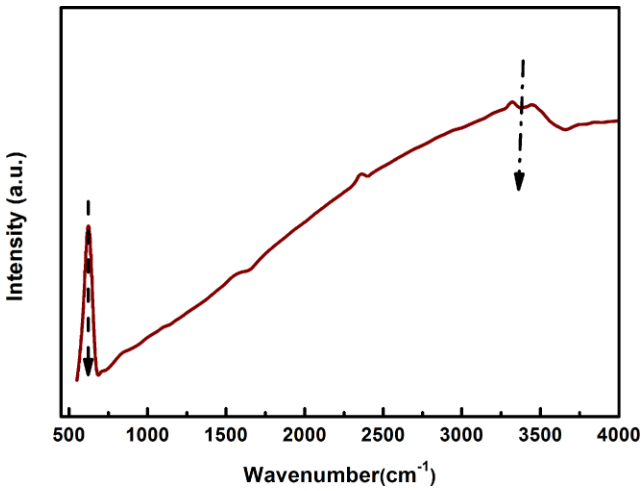

Figure S11. Mid-IR absorption spectrum of the short hexapod Cu_2O microcrystals.

As shown in Figure S11, two major peaks appeared in the spectrum of the short hexapod Cu_2O microcrystals. The peak at 617 cm^{-1}corresponds to the vibrational mode of Cu–O in Cu_2O, [1] and peak at 3300-3500 cm^{-1} corresponds to the water which results from the ambient condition. From the analysis above, we can conclude that a "clean surface"Cu_2O was obtained by our route.

1. B. Balamurugan, B. Mehta, *Thin Solid Films* 2001, **396**, 90-96.