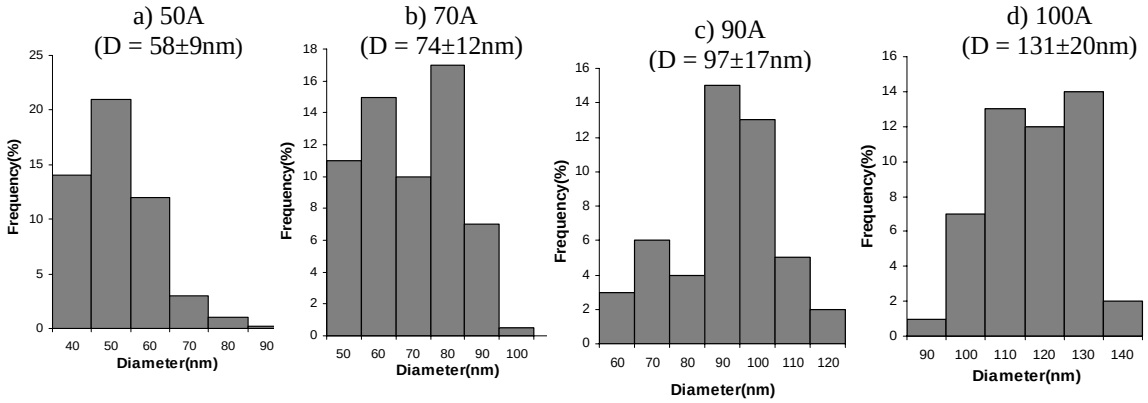


Fig. S1. Effects of four different currents (50-100A) on the size distributions of the arc fabricated Cu

Nps, in distilled water calculated on the basis of the corresponding SEM images (Fig. 1a-d).

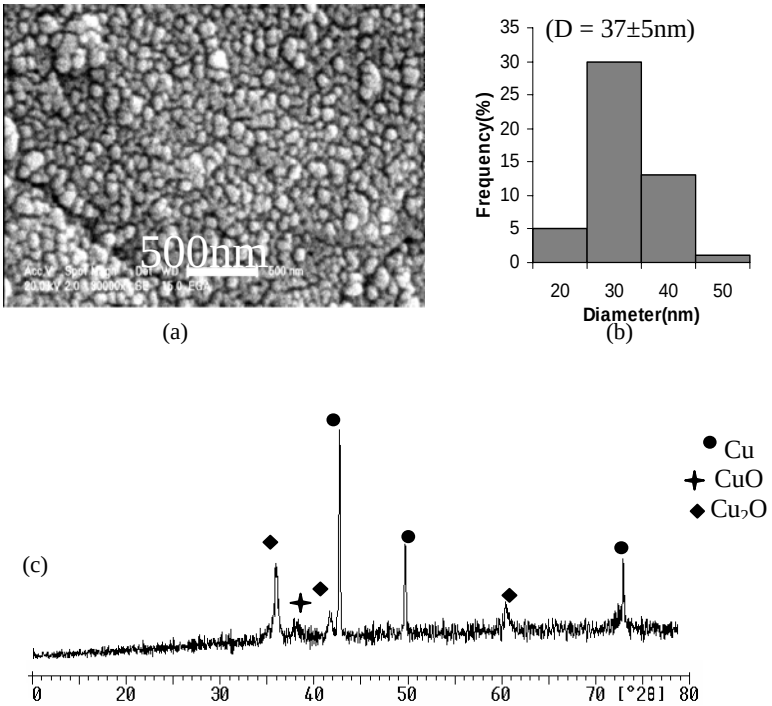


Fig. S2. Characterizations of a sample of the watery black nanopowders, arc fabricated at 50A: The SEM image (a), the size distribution calculated on the basis of the corresponding SEM image (b), and the XRD pattern showing a mixture of Cu, Cu_2O, and CuO (c).

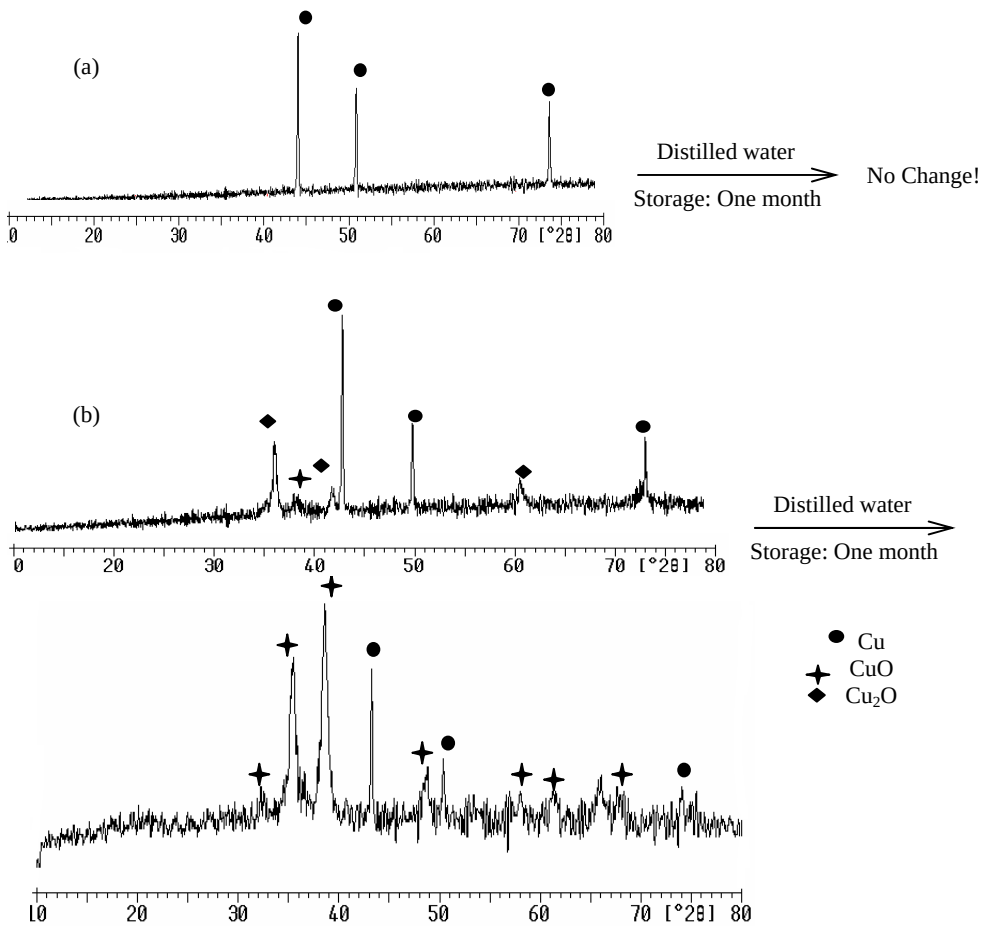
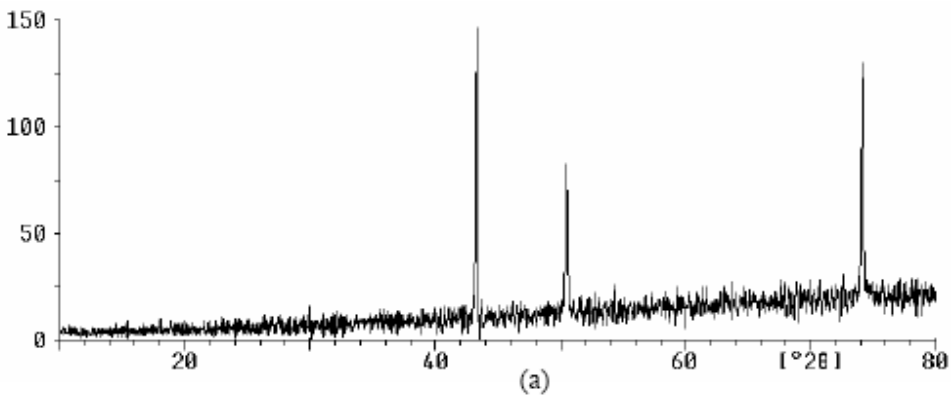
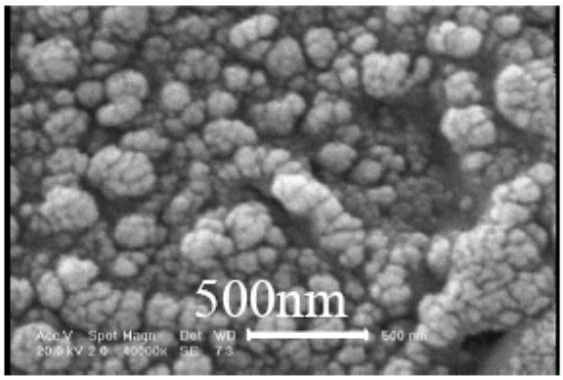

(a)
Distilled water
Storage: One month
No Change!
0
20
30
40
50
60
70 [°2θ] 80
(b)
Distilled water
Storage: One month
0
20
30
40
50
60
70 [°2θ] 80
Cu
CuO
Cu2O
10
20
30
40
50
60
70 [°2θ] 80

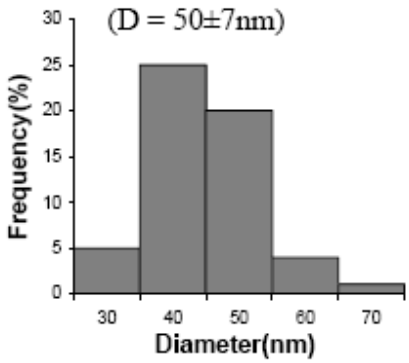
Fig. S3. Comparison between XRD patterns of as-produced nanopowders fabricated at 50A, before and after one month storage in distilled water: the brown nanopowder containing pure Cu Nps (a), the dark mixture initially containing Cu and copper oxides nanoparticles (b).



(a)

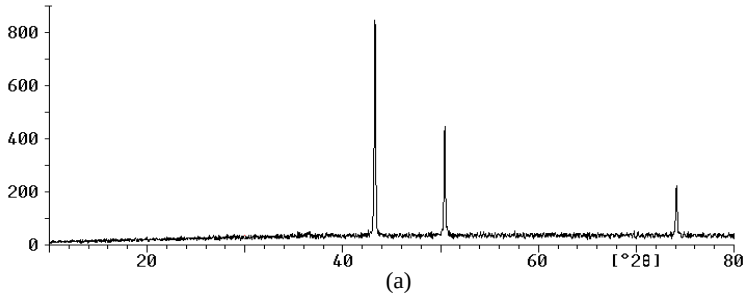


(b)

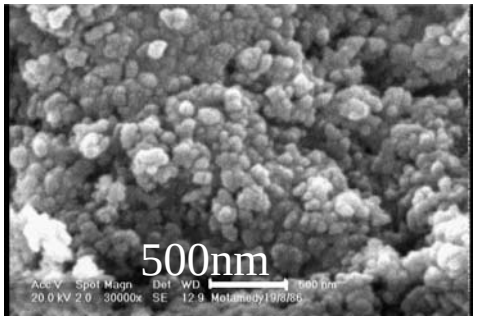


(c)

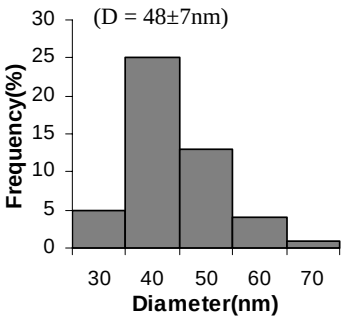
Fig. S4. Characterizations of the arc fabricated brown nanopowder obtained using an aqueous PVP medium at 50A: The XRD pattern showing pure Cu Nps as the only product (a), the SEM image (b), and the size distribution calculated on the basis of the corresponding SEM image (c).



(a)



(b)



(c)

Fig. S5. Characterizations of a brown nanopowder, arc fabricated at 30A in distilled water: The XRD pattern showing pure Cu Nps as the only product (a), the SEM image (b), and the size distribution calculated on the basis of the corresponding SEM image (c).