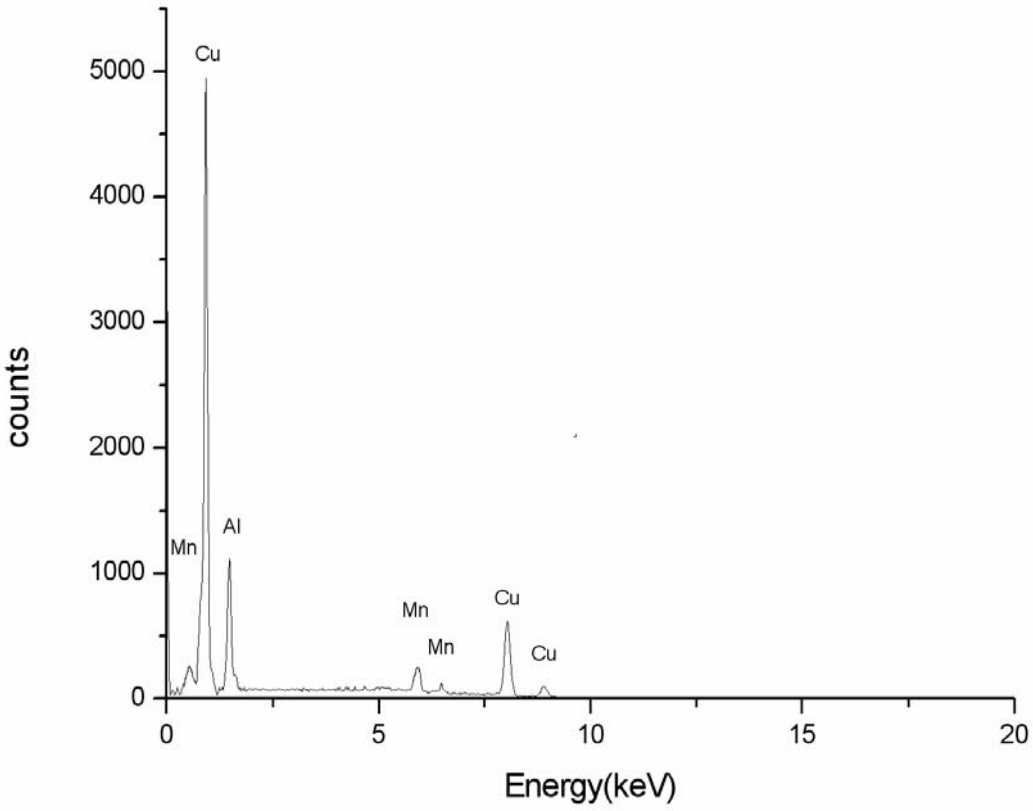

Fig. 3

Fig. 3 A typical EDS spectrum of the as-quenched $Cu_{2.8}Mn_{0.2}Al$ alloy.

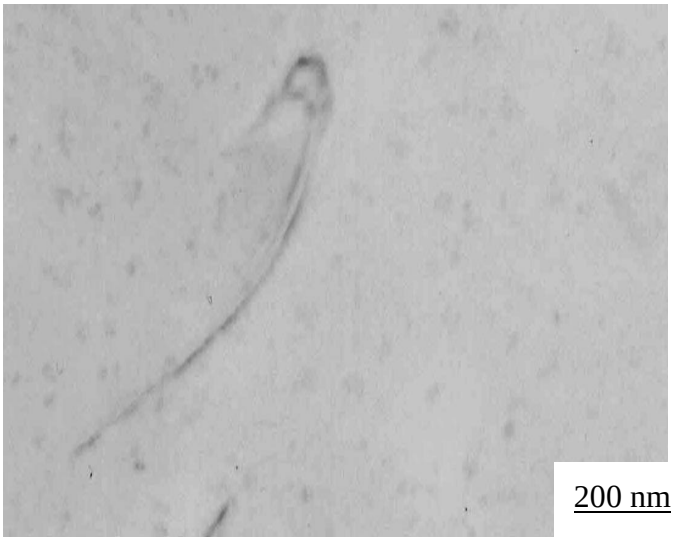
200 nm

Fig. 4(a)

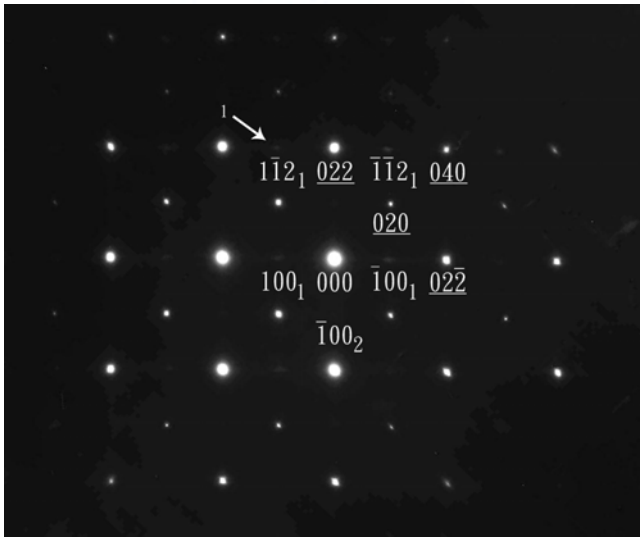
1
$1\bar{1}2_1$ 022 $\bar{1}\bar{1}2_1$ 040
020
100_1 000 $\bar{1}00_1$ $02\bar{2}$
$\bar{1}00_2$

Fig. 4(b)

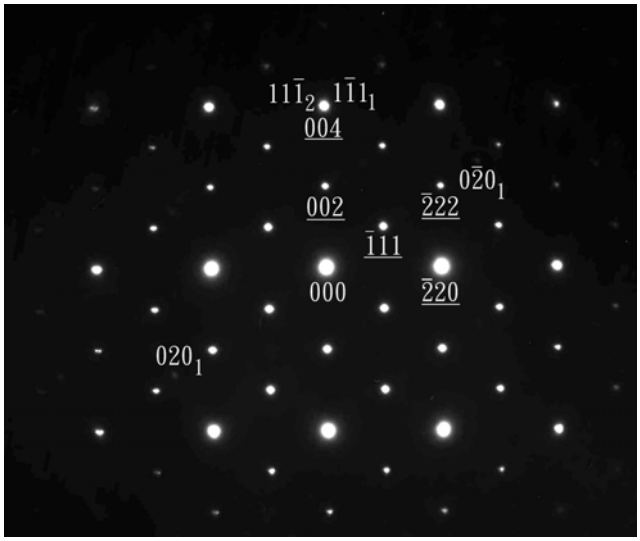
$11\bar{1}_2$ $1\bar{1}1_1$
004
$0\bar{2}0_1$
002
$\bar{2}22$
$\bar{1}11$
000
$\bar{2}20$
020_1

Fig. 4(c)

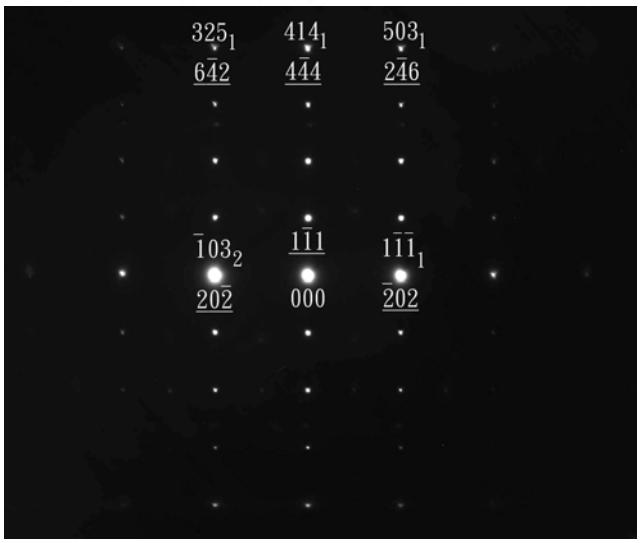
325_1 414_1 503_1
$6\bar{4}2$ $4\bar{4}4$ $2\bar{4}6$
$\bar{1}03_2$ $1\bar{1}1$ $1\bar{1}\bar{1}_1$
$20\bar{2}$ 000 $\bar{2}02$

Fig. 4(d)

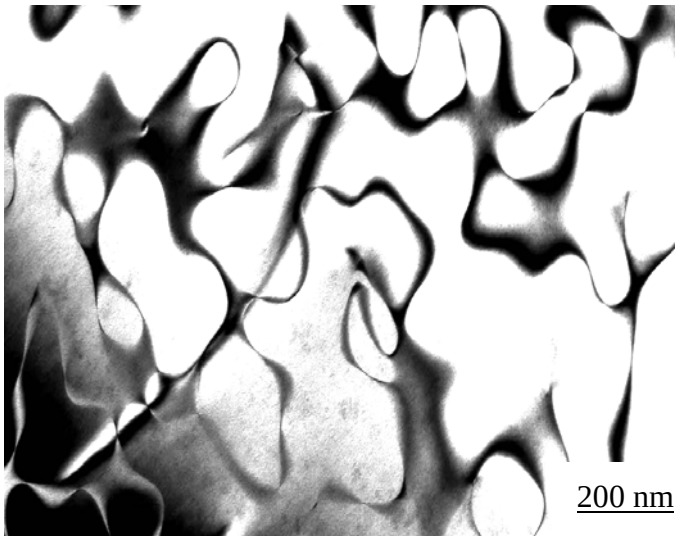

Fig. 4(e)

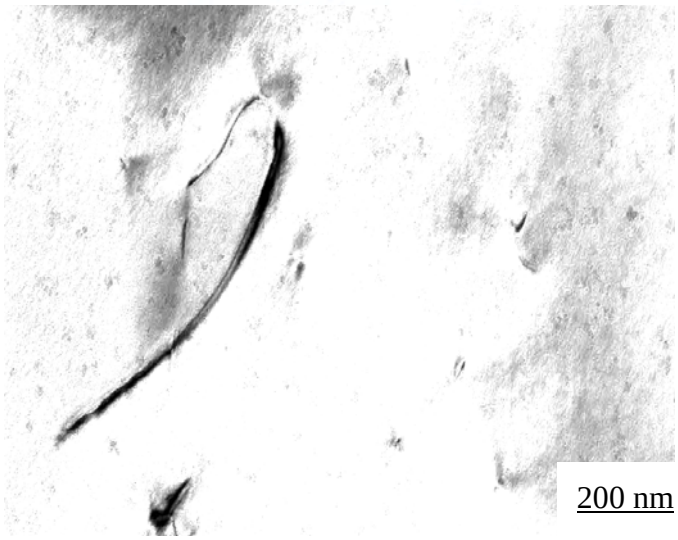

Fig. 4(f)

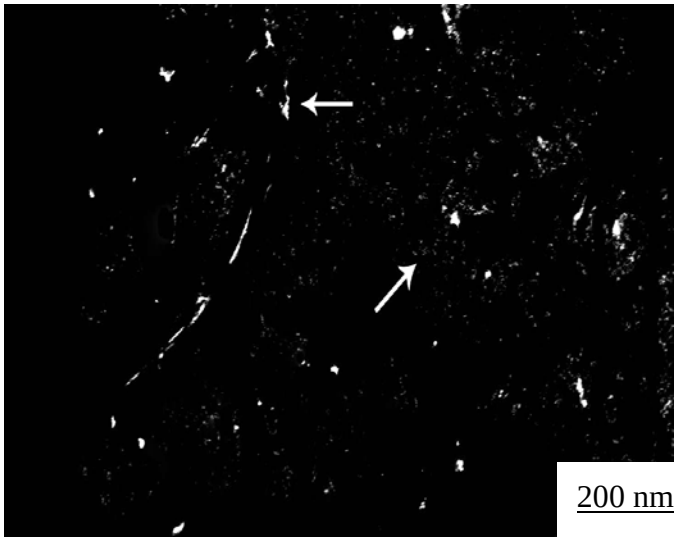

Fig. 4(g)

Figure 4. Electron micrographs of the as-quenched alloy. (a) BF, (b)-(d) three SADPs taken from $D0_3$ matrix and fine precipitates. The foil normals are [100], [110] and [121], respectively.(hkl = $D0_3$ phase, $hkl_{1,\ or\ 2}$ = L-J phase, 1: variant 1; 2: variant 2) (e)-(f) (111) and (200) $D0_3$ DF electron micrographs, respecitively. (g) a DF micrograph taken with the reflection spot marked as 〝1〞 in (b).

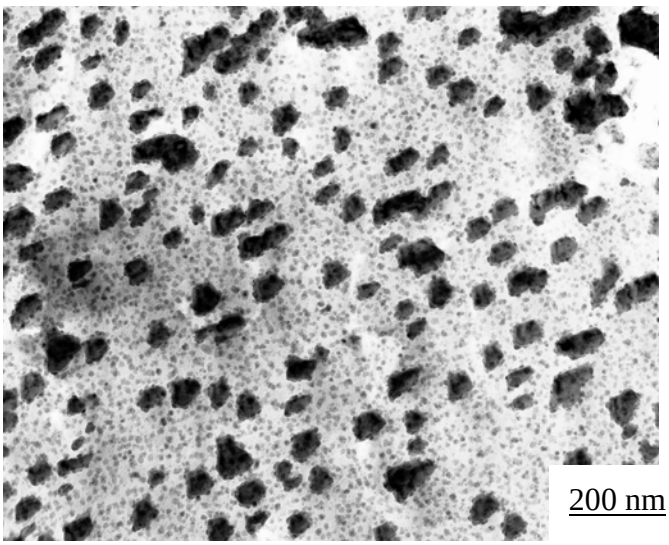
200 nm

Fig. 5(a)

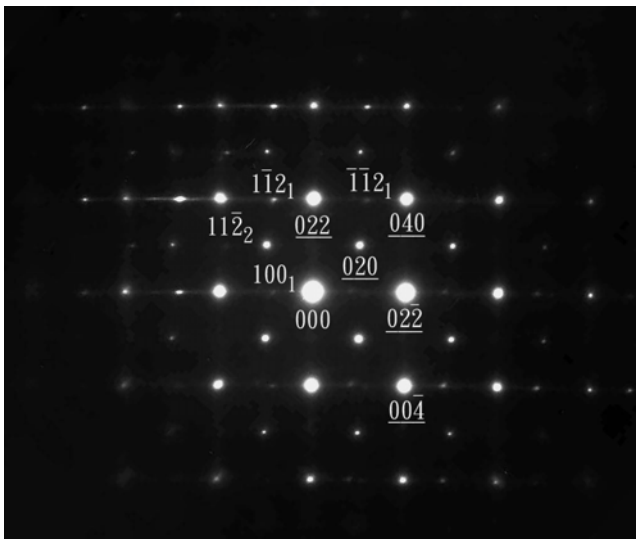
$1\bar{1}2_1$
$\bar{1}\bar{1}2_1$
$11\bar{2}_2$
022
040
020
100_1
000
$02\bar{2}$
$00\bar{4}$

Fig. 5(b)

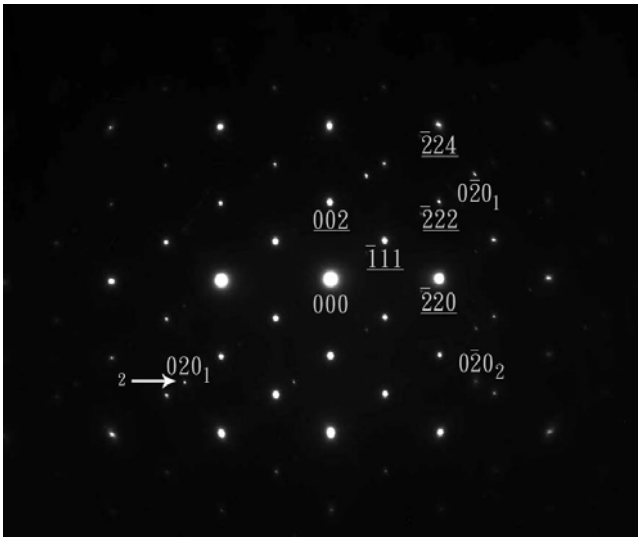
$\bar{2}24$
$0\bar{2}0_1$
002
$\bar{2}22$
$\bar{1}11$
000
$\bar{2}20$
2
020_1
$0\bar{2}0_2$

Fig. 5(c)

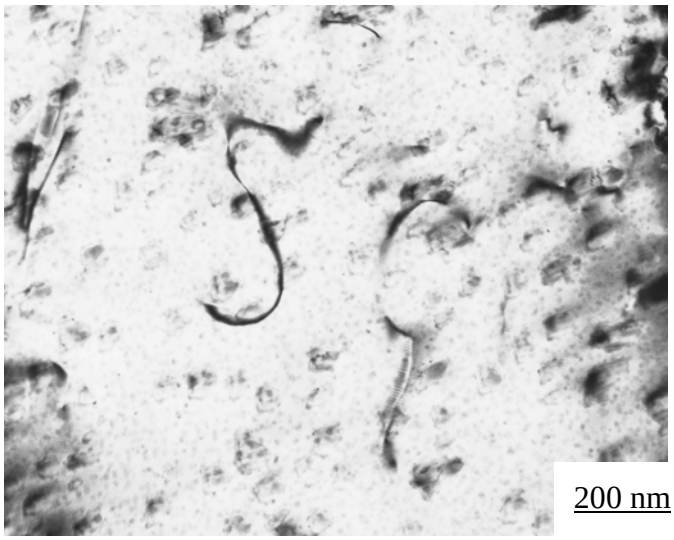
200 nm

Fig. 5(d)

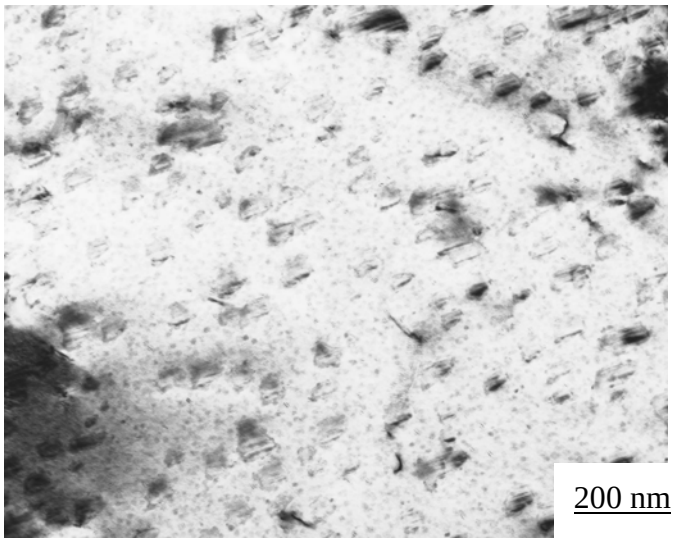

Fig. 5(e)

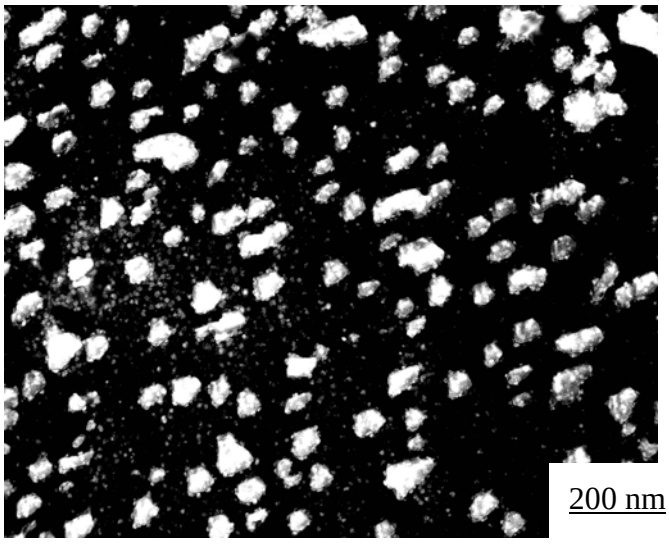

Fig. 5(f)

Figure 5. Electron micrographs of the alloy aged at 350℃ for 24 hours. (a) BF, (b)-(c) two SADPs taken from $D0_3$ matrix and fine precipitates. The foil normals are [100] and [110], respectively. (<u>hkl</u> = $D0_3$ phase, $hkl_{1,\text{ or }2}$ = L-J phase, 1: variant 1; 2: variant 2) (d)-(e) (111) and (200) $D0_3$ DF electron micrographs, respecitively. (f) a DF micrograph, which was taken with the reflection spot marked as 〝2〞 in (c).

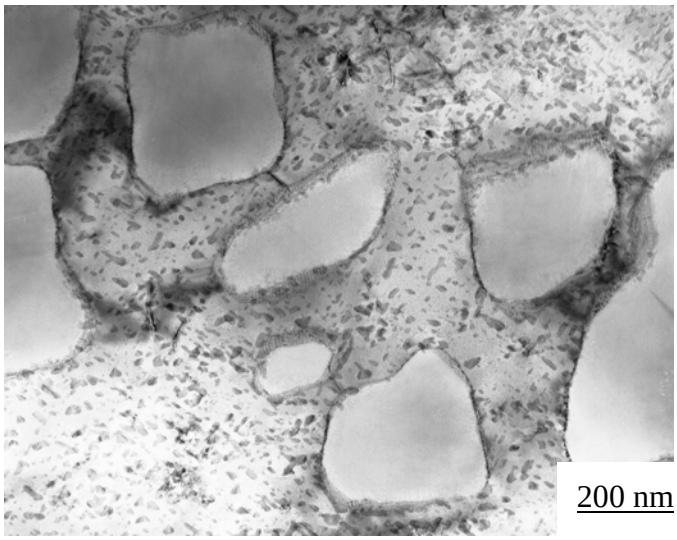

Fig. 6(a)

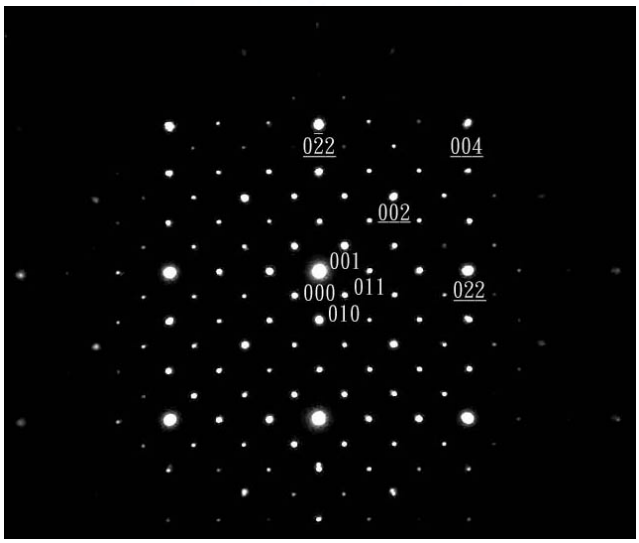

Fig. 6(b)

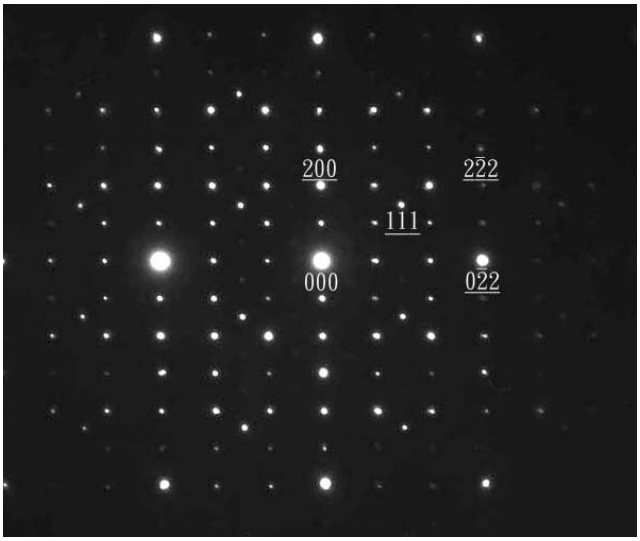

Fig. 6(c)

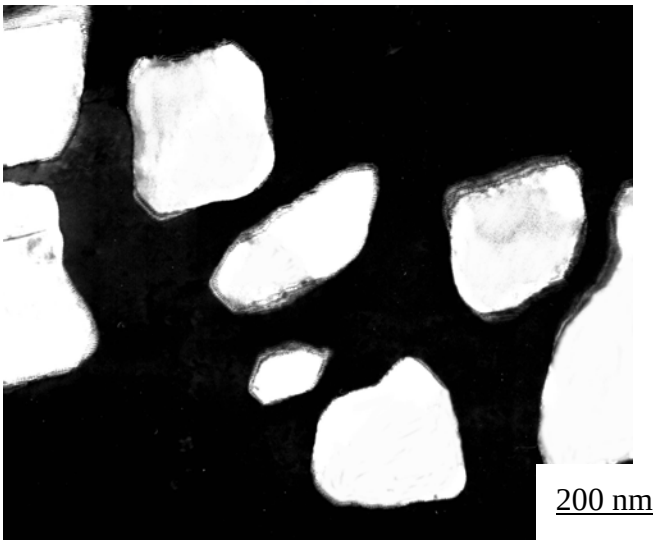

Fig. 6(d)

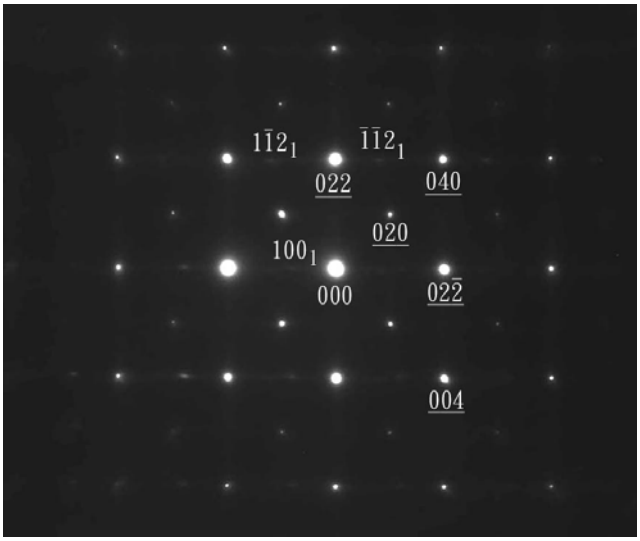
$1\bar{1}2_1$
$\bar{1}\bar{1}2_1$
022
040
020
100_1
000
$02\bar{2}$
004

Fig. 6(e)

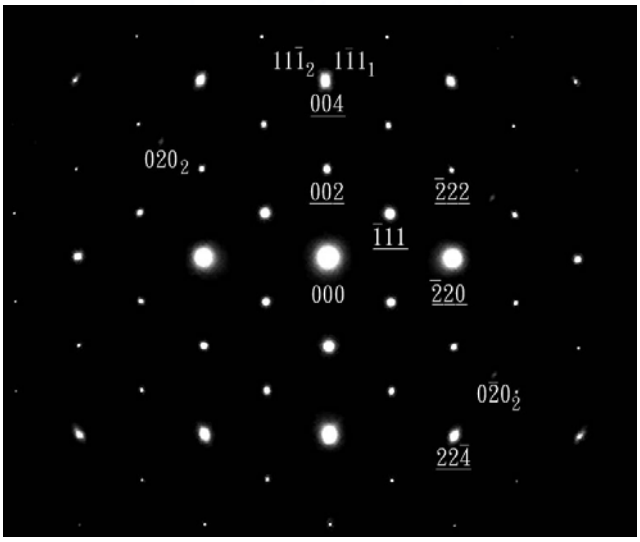
$11\bar{1}_2$
$\bar{1}11_1$
004
020_2
002
$\bar{2}22$
$\bar{1}11$
000
$\bar{2}20$
$0\bar{2}0_2$
$22\bar{4}$

Fig. 6(f)

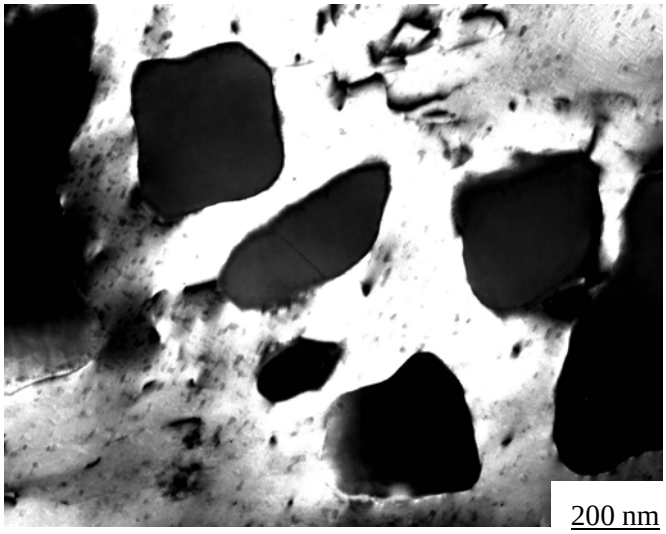

Fig. 6(g)

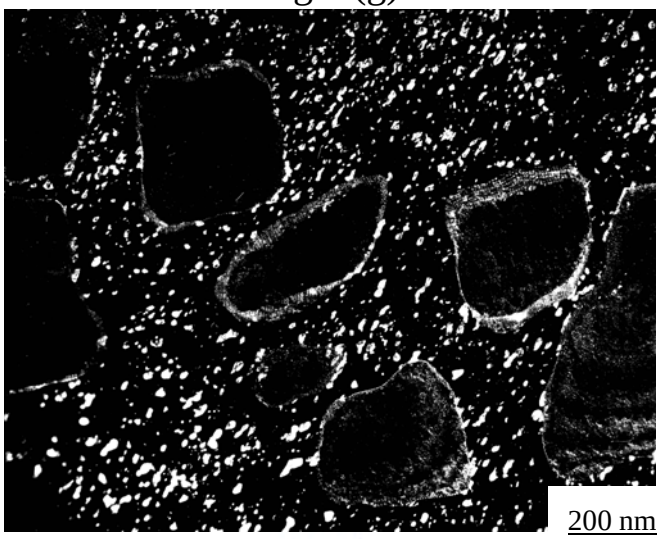

Fig. 6(h)

Figure 6. Electron micrographs of the alloy aged at 450℃ for 16 hours. (a) BF, (b)-(c) two SADPs taken from $D0_3$ matrix and irregular-like precipitates. The foil normals are [001] and [011].($\underline{hkl}$: matrix, hkl : γ - brass) (d) (001) γ_2 DF electron micrograph , (e)-(f) two SADPs taken from $D0_3$ matrix and fine precipitates. The foil normals are [100] and [110], respectively. ($\underline{hkl}$ = $D0_3$ phase, $hkl_{1,\text{ or }2}$ = L-J phase, 1: variant 1; 2: variant 2) (g) (111) $D0_3$ DF electron micrograph. (h) (100)L-J DF electron micrograph.

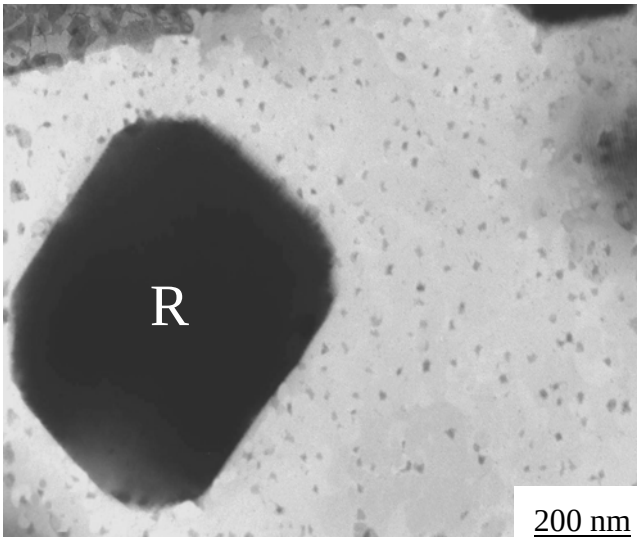

Fig. 7(a)

Fig. 7(b)

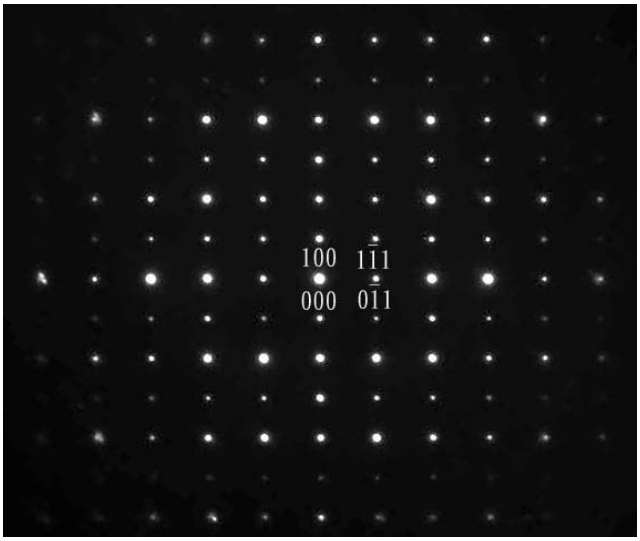
100 1$\bar{1}$1
000 0$\bar{1}$1

Fig. 7(c)

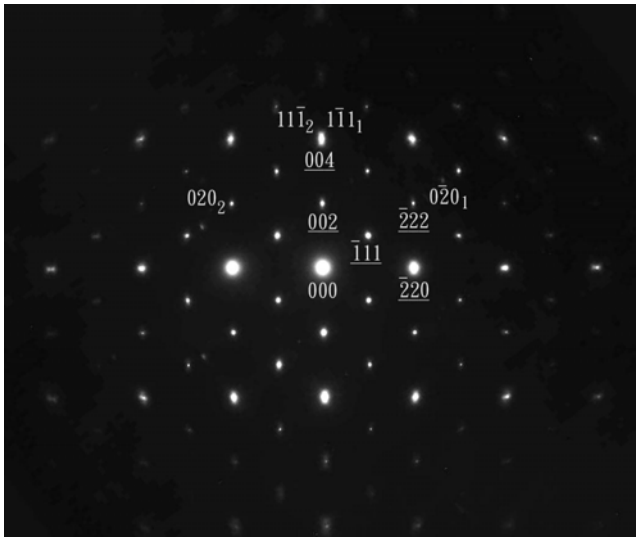
11$\bar{1}_2$ 1$\bar{1}1_1$
004
020$_2$
0$\bar{2}$0$_1$
002
$\bar{2}$22
$\bar{1}$11
000
$\bar{2}$20

Fig. 7(d)

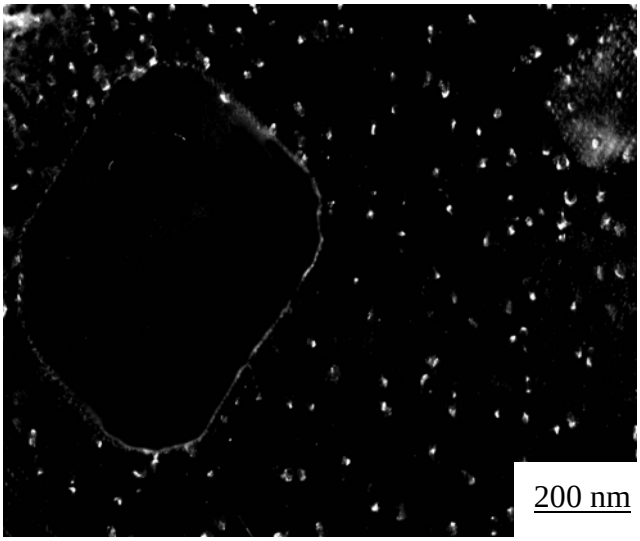

Fig. 7(e)

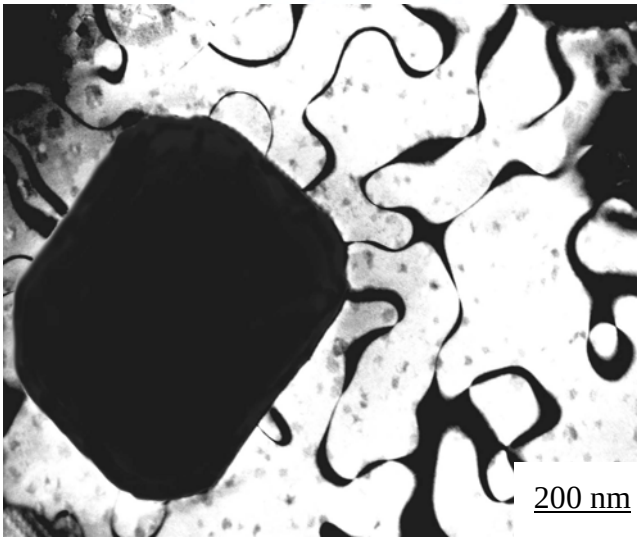

Fig. 7(f)

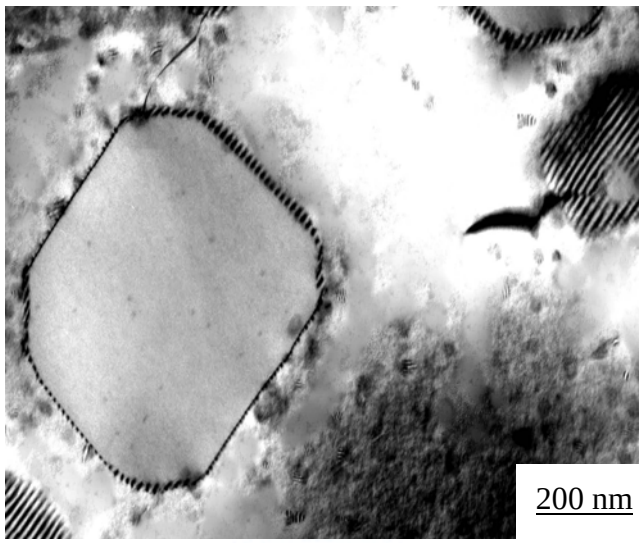

Fig. 7(g)

Figure 7. Electron micrographs of the alloy aged at 650℃ for 2 hours. (a) BF, (b)-(c) two SADPs taken from the precipitate marked as〝R〞in (a). The foil normals are [001] and [011]. (d) an SADP taken from the $D0_3$ matrix. The foil normal is [110]. (hkl = $D0_3$ phase, $hkl_{1, or\ 2}$ = L-J phase, 1: variant 1; 2: variant 2) (e) (020)L-J DF electron micrograph, (f)-(g) (111) and (200) $D0_3$ DF electron micrographs.

Fig. 8(a)

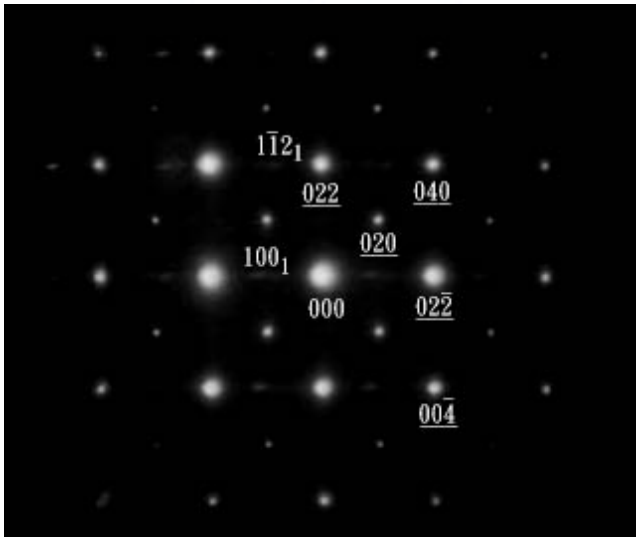

Fig. 8(b)

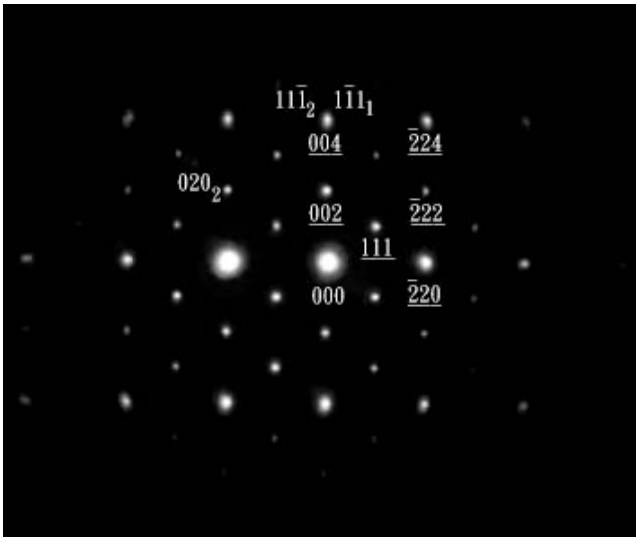

Fig. 8(c)

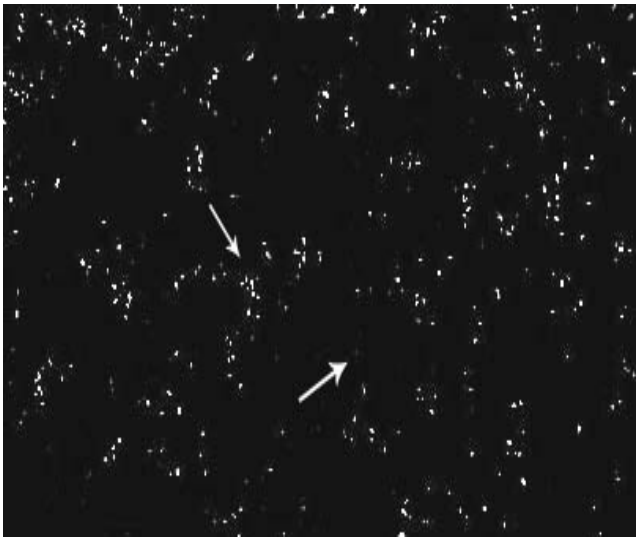

Fig. 8(d)

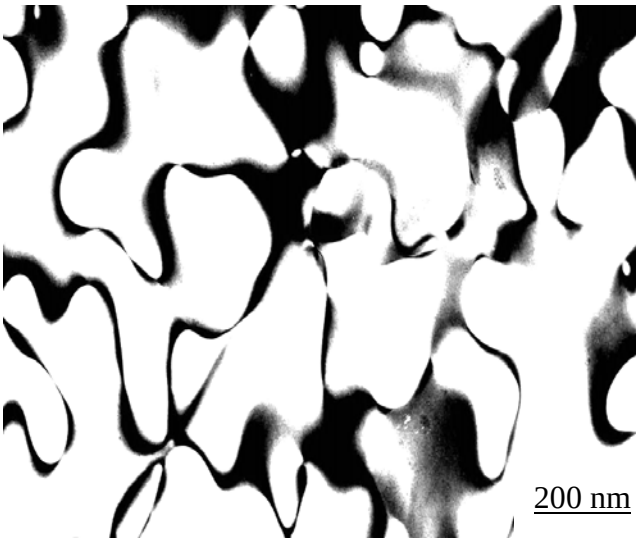

Fig. 8(e)

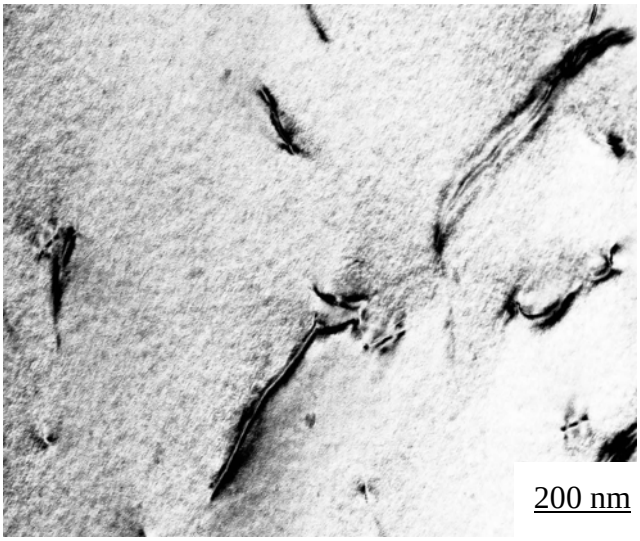

Fig. 8(f)

Figure 8. Electron micrographs of the alloy aged at 750℃ for 1 hour. (a) BF, (b)-(c) two SADPs taken from the matrix. The foil normals are [100] and [110], respectively. (<u>hkl</u> = $D0_3$ phase, $hkl_{1,\text{ or }2}$ = L-J phase, 1: variant 1; 2: variant 2) (d) (020)L-J DF electron micrograph, (e)-(f) (111) and (200) $D0_3$ DF electron micrographs.