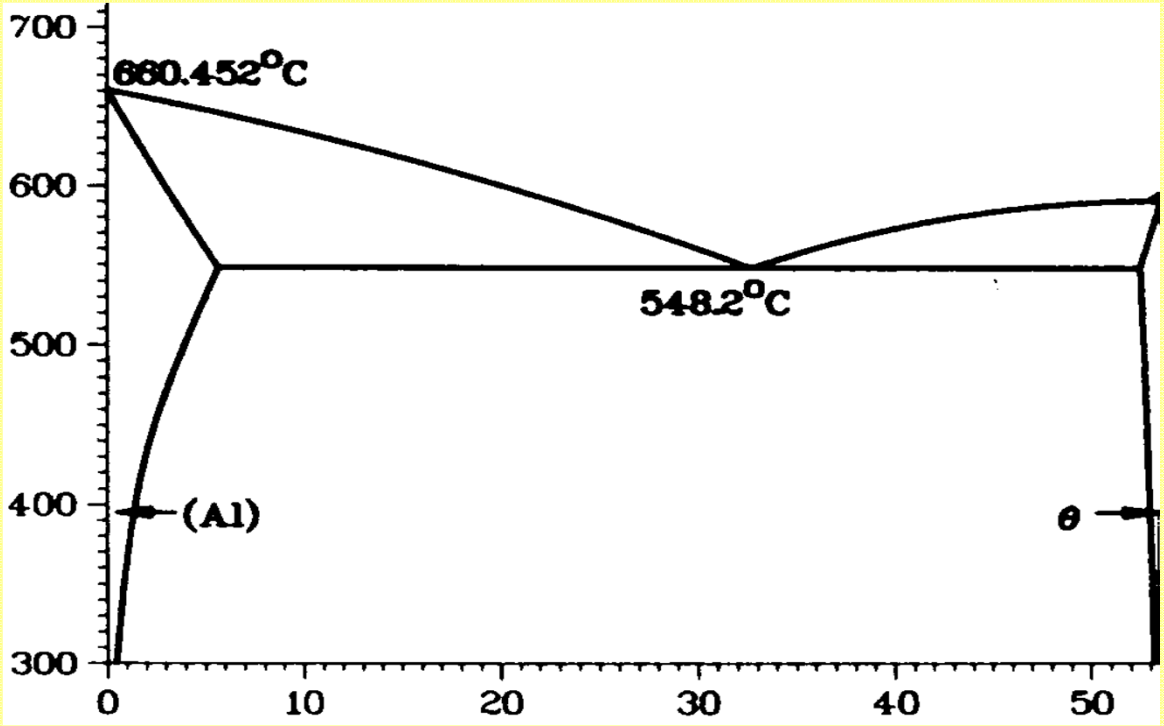


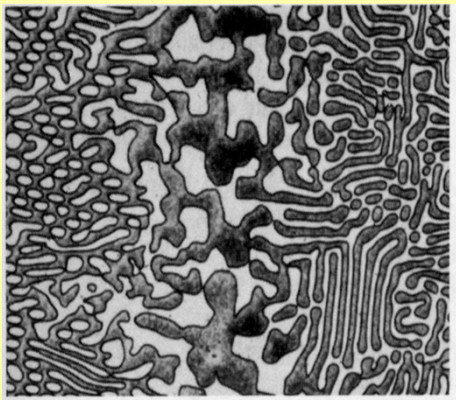


Fig. 17 Interfaces between phases in a reversible-matrix, aluminum-copper eutectic alloy. Etchant and magnification not reported

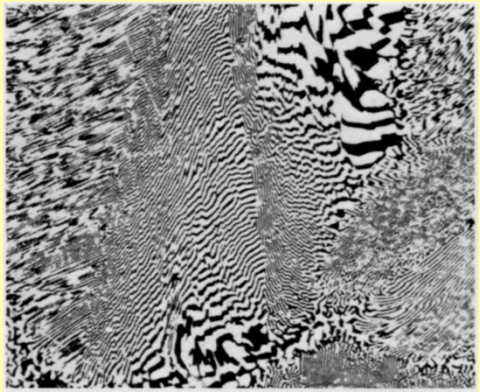


Fig. 10 Colony structure of a $CuAl_2$-Al lamellar eutectic in a casting that was not unidirectionally solidified. Section shows the honeycomb pattern (where section is normal to direction of solidification) and the fanlike arrangement (where section is parallel to direction of solidification). As-polished. 250×

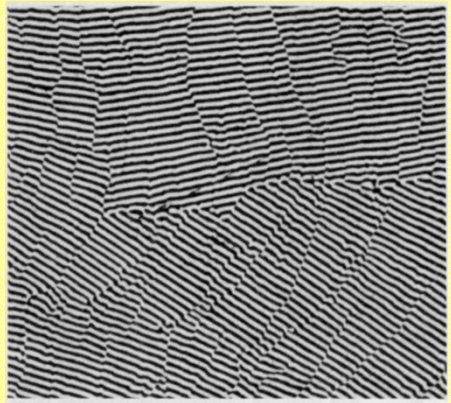
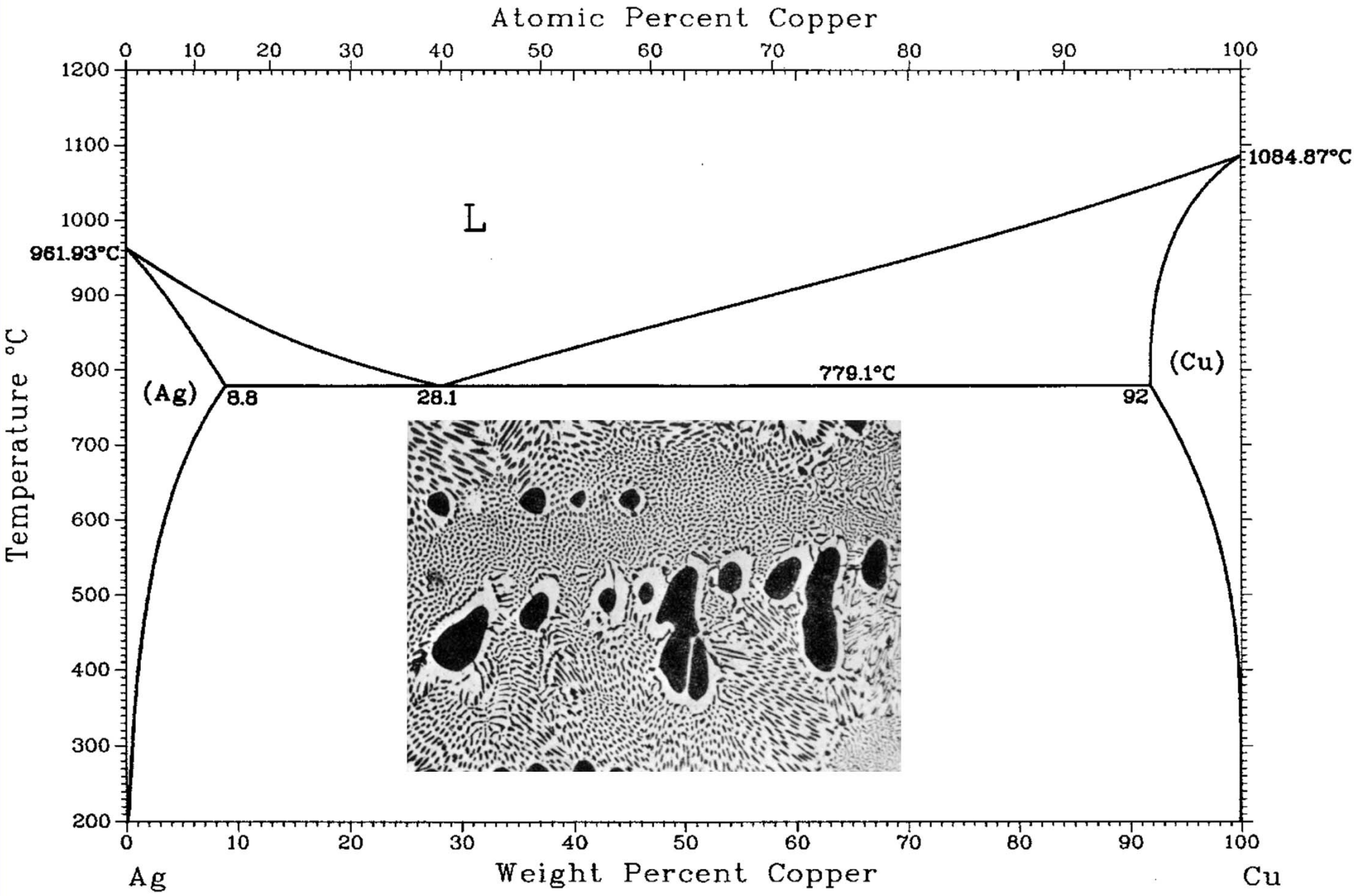


Fig. 11 Lower magnification view of a $CuAl_2$-Al lamellar eutectic in a casting that was solidified unidirectionally showing difficulty of identifying the grain structure of this eutectic. The two "grains" at right (lamellae at about 40° to one another) merge into one "grain" at left. As-polished. 180×

Ag-Cu


Atomic Percent Copper
0 10 20 30 40 50 60 70 80 90 100
1200
1100
1000
900
800
700
600
500
400
300
200
Temperature °C
L
961.93°C
1084.87°C
779.1°C
(Ag)
(Cu)
8.8
28.1
92
0 10 20 30 40 50 60 70 80 90 100
Ag
Weight Percent Copper
Cu

Mg-Sn

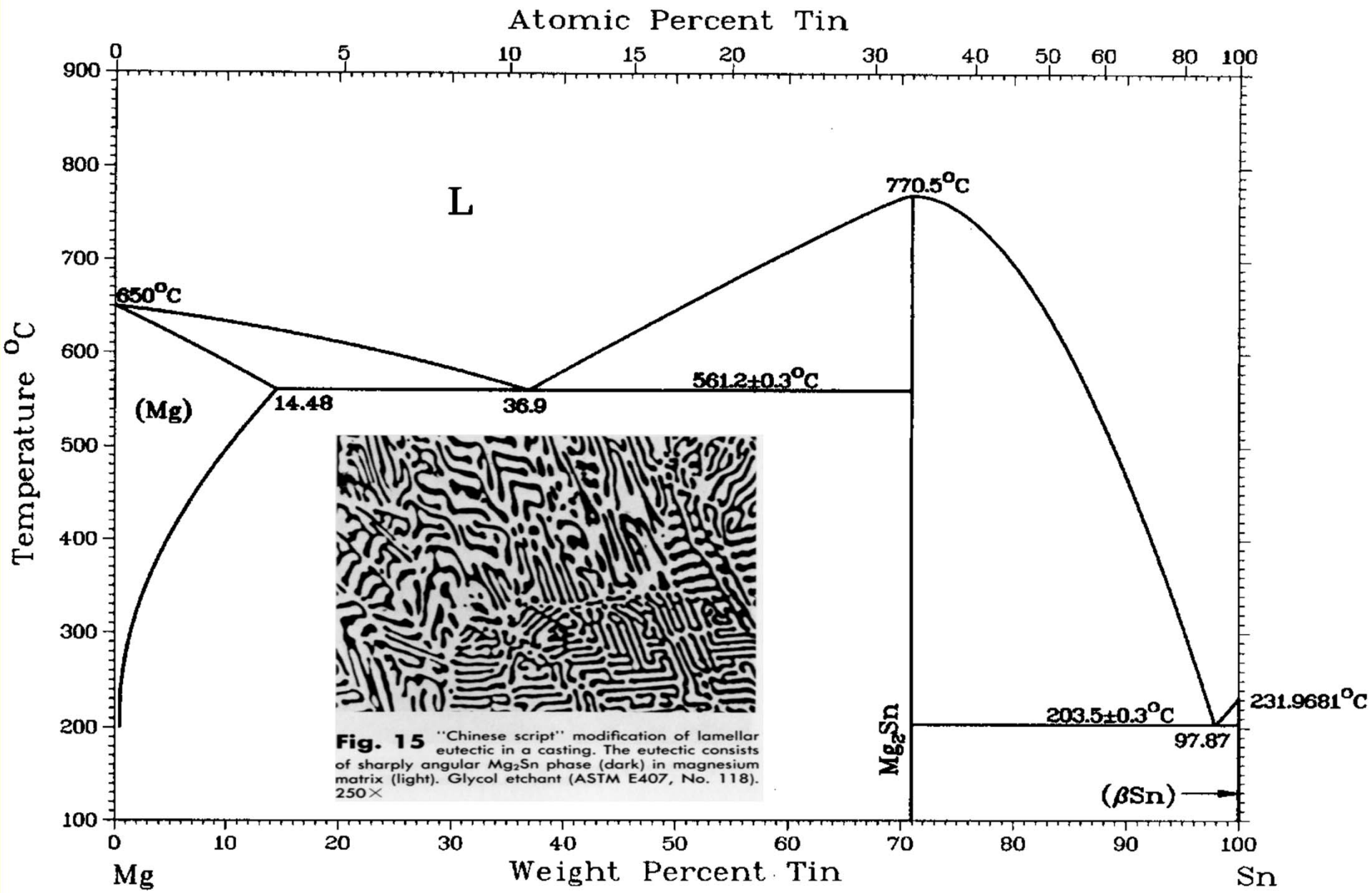


Fig. 15 "Chinese script" modification of lamellar eutectic in a casting. The eutectic consists of sharply angular Mg_2Sn phase (dark) in magnesium matrix (light). Glycol etchant (ASTM E407, No. 118). 250×

4.7 - Solidificação unidirecional com eutéticos

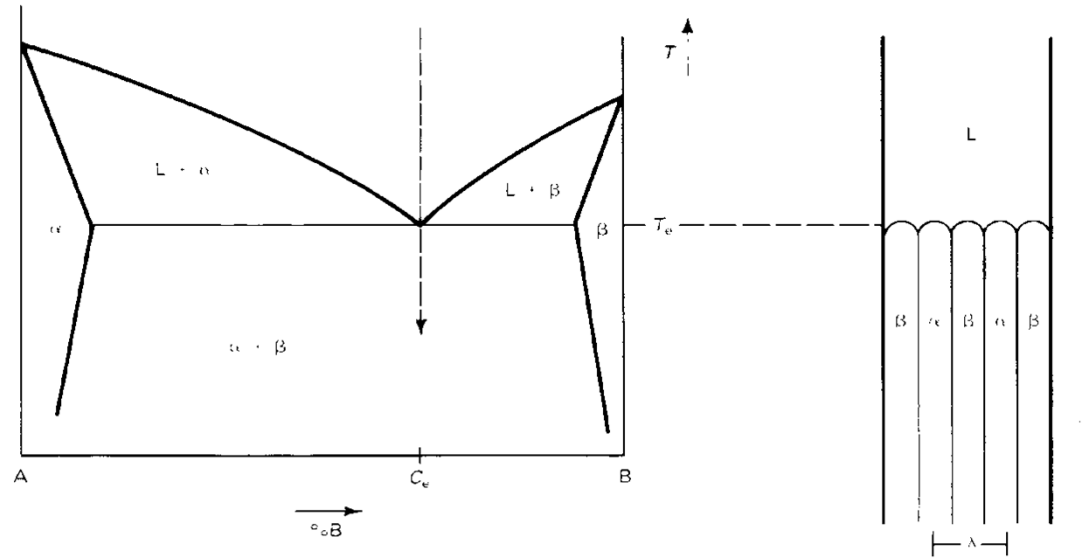


Fig. 1 Phase diagram for a eutectic system showing the eutectic invariant point at temperature (T_e) and composition (C_e)

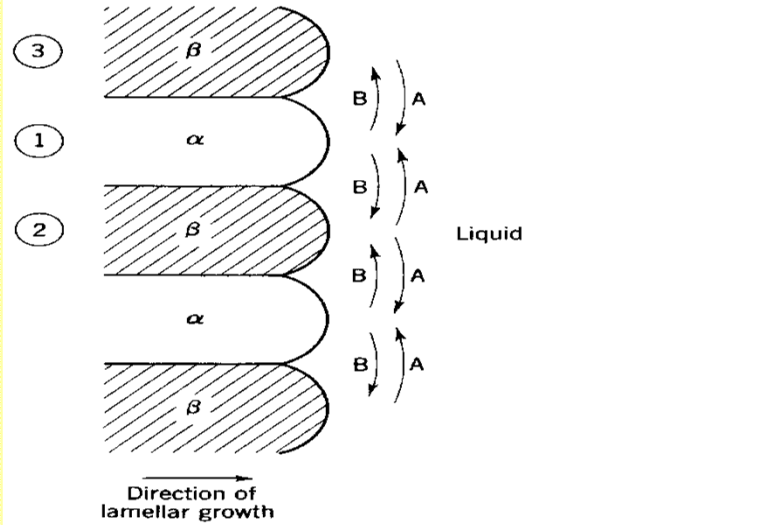


Fig. 6.13 *Lamellar growth in eutectic solidification.*

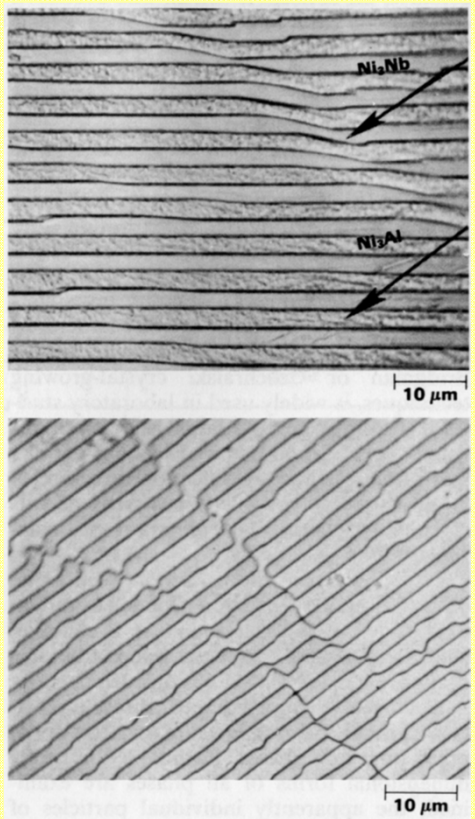


Fig. 4, 5 Lamellar eutectic structures. Fig. 4: Casting of Ni_3Al-Ni_3Nb solidified unidirectionally (left to right). Fig. 5: Same casting as Fig. 4, but a section taken normal to the direction of solidification, showing alternate lamellae of Ni_3Al and Ni_3Nb. Both etched in 5 parts HCl, 1 part HNO_3, 6 parts glycerol. 1000×

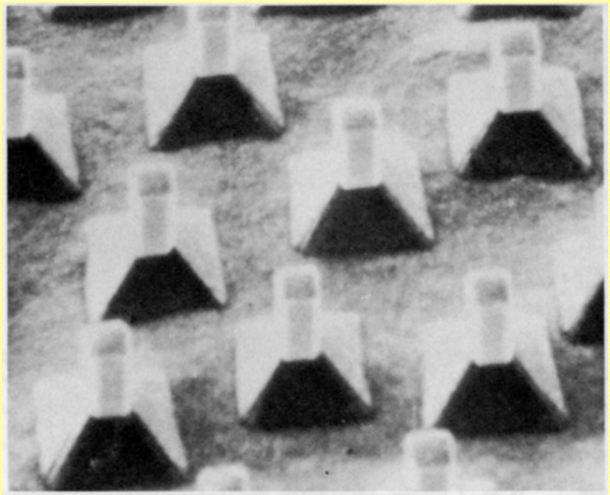


Fig. 7 Scanning electron micrograph of fibrous eutectic unidirectionally solidified vertically. Section shows exposed tantalum carbide particles in a superalloy nickel matrix. Etchant not identified. 40 000×. (M. Henry)

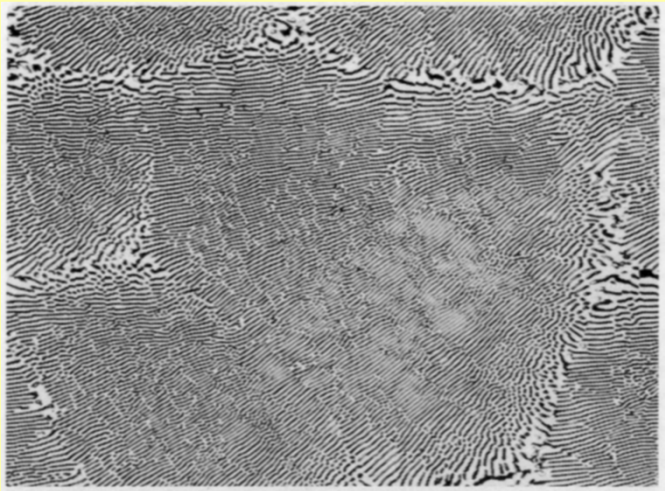


Fig. 9 Colony structure of a lamellar eutectic that was solidified unidirectionally. Section taken normal to the direction of solidification showing the honeycomb pattern of the colonies, which were formed when constitutional undercooling caused the freezing face to be cellular in shape, rather than essentially planar. Dark and light layers in each colony are Mg_2Al_3 phase and aluminum, respectively. Etchant not identified. 200×

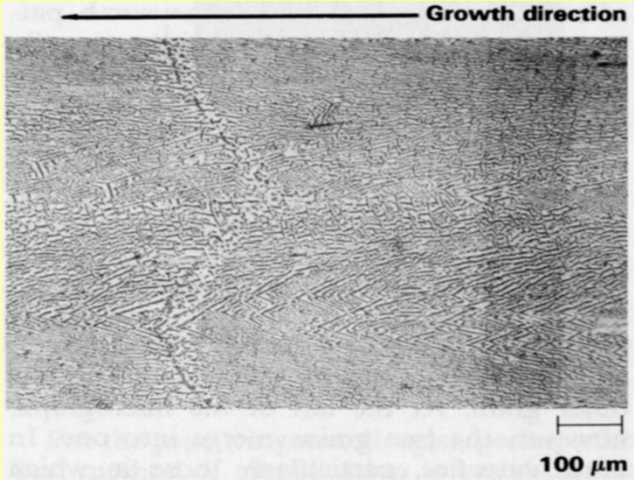


Fig. 8 Colony structure of rod eutectic that was solidified unidirectionally (right to left). Section parallel to direction of growth shows fanlike arrangement of niobium carbide rods (dark) in nickel matrix (light) resulting from curved liquid-solid interface. Murakami's reagent. 30×

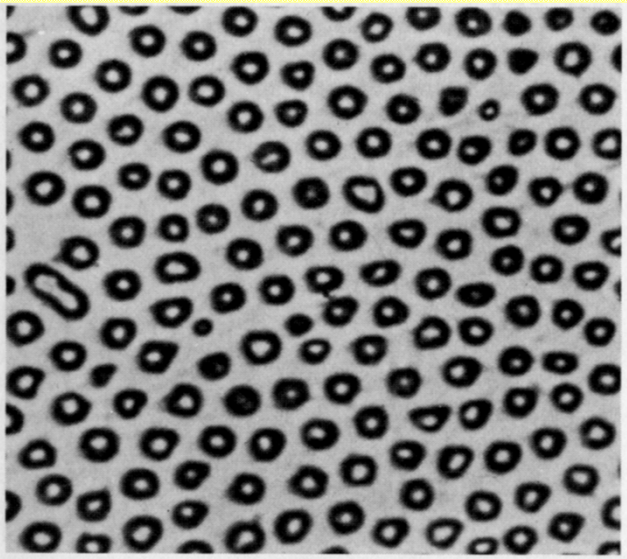


Fig. 26 Transverse section through parallel rods in a unidirectionally solidified Mg-32Al eutectic alloy. Growth rate was 1.5×10^{-2} mm/s (6×10^{-4} in./s). Temperature gradient was 3.7 °C/mm (1.7 °F/10^{-2}in.). Etchant and magnification not reported. (Ref 17)

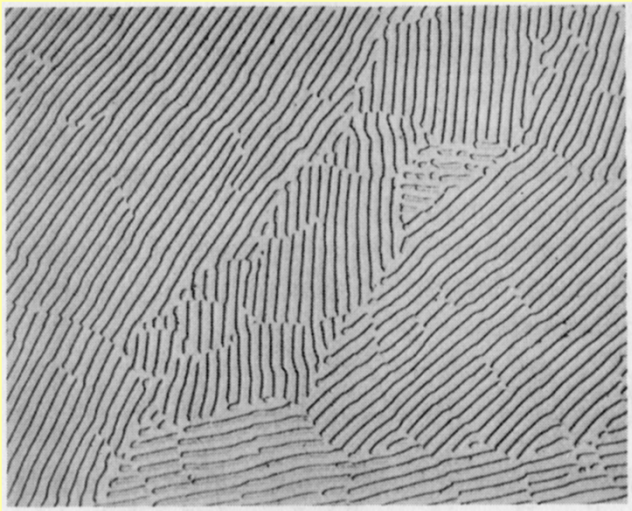


Fig. 31 Lamellae in a unidirectionally solidified aluminum-copper eutectic alloy. Etchant and magnification not reported. (Ref 1)

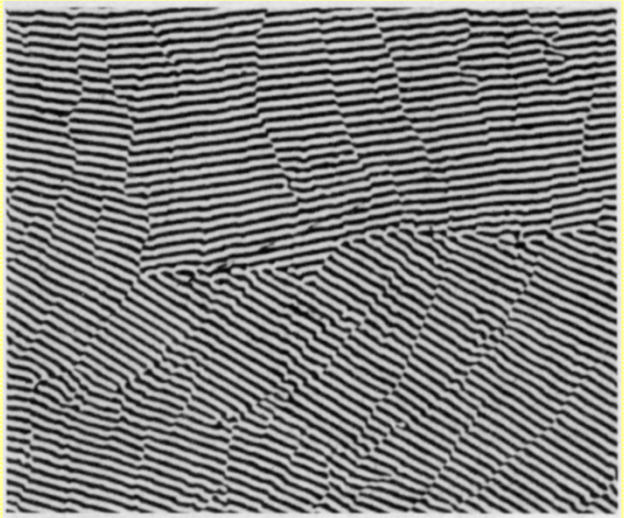
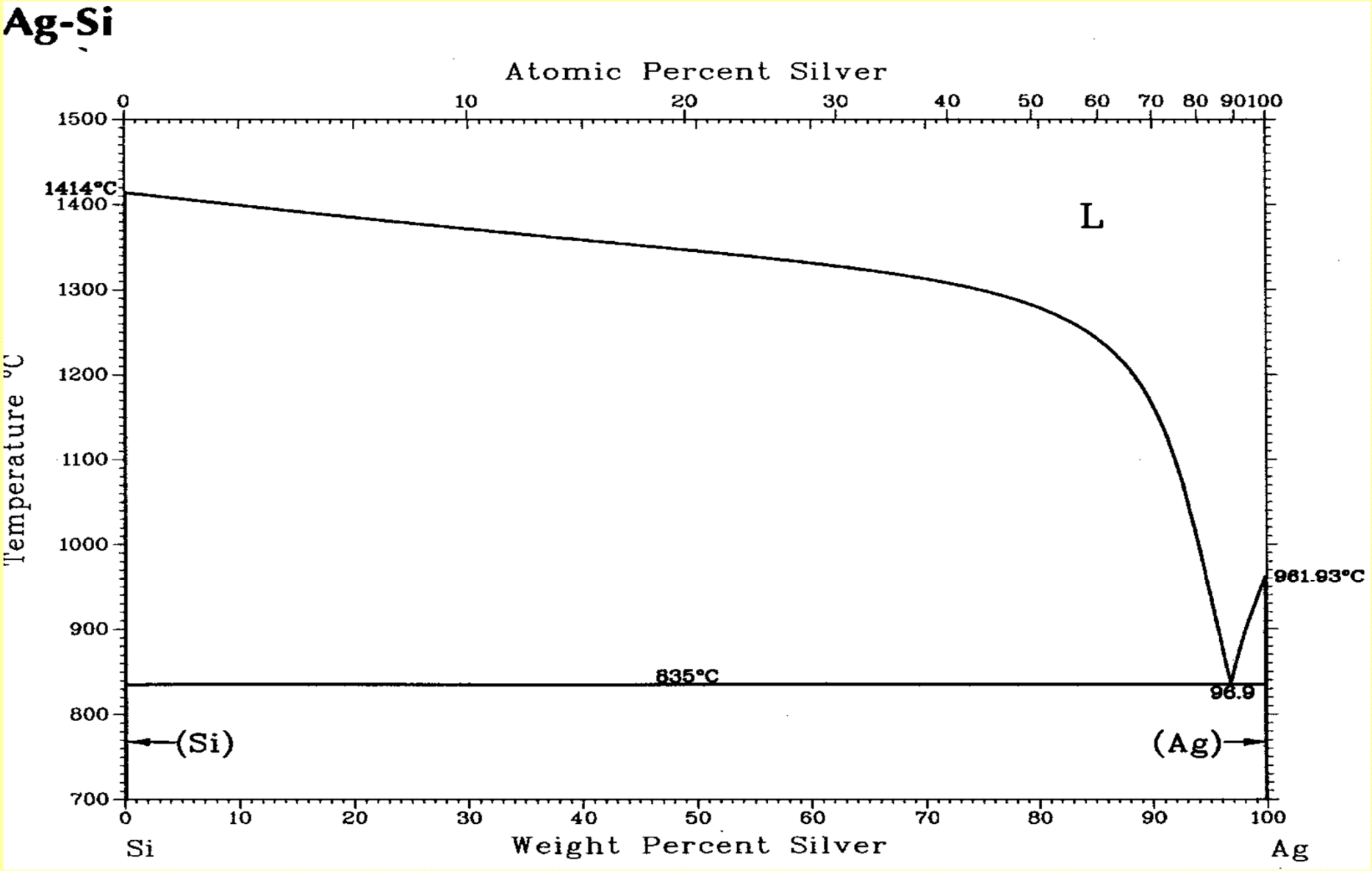
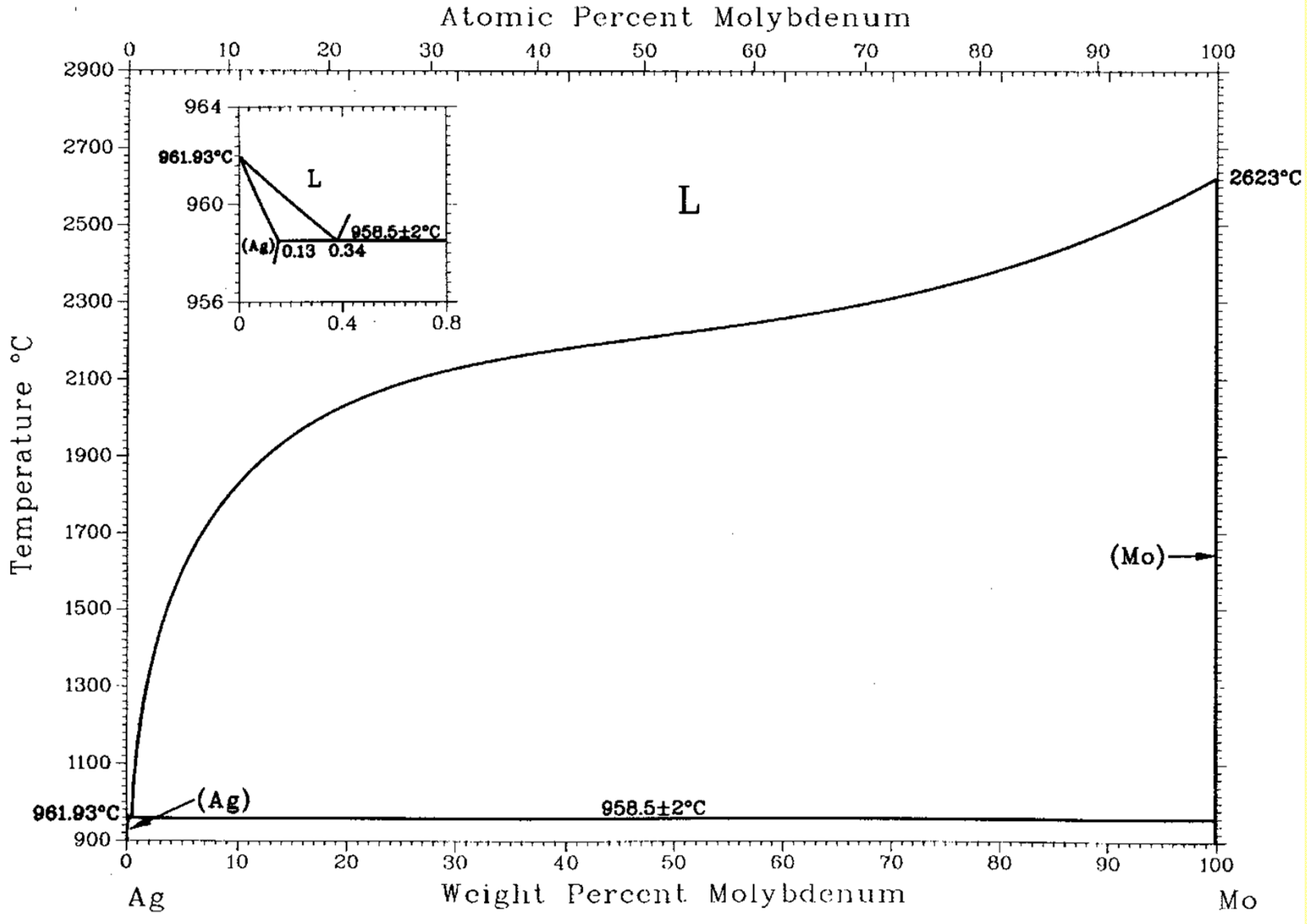


Fig. 11 Lower magnification view of a $CuAl_2$-Al lamellar eutectic in a casting that was solidified unidirectionally showing difficulty of identifying the grain structure of this eutectic. The two "grains" at right (lamellae at about 40° to one another) merge into one "grain" at left. As-polished. 180×

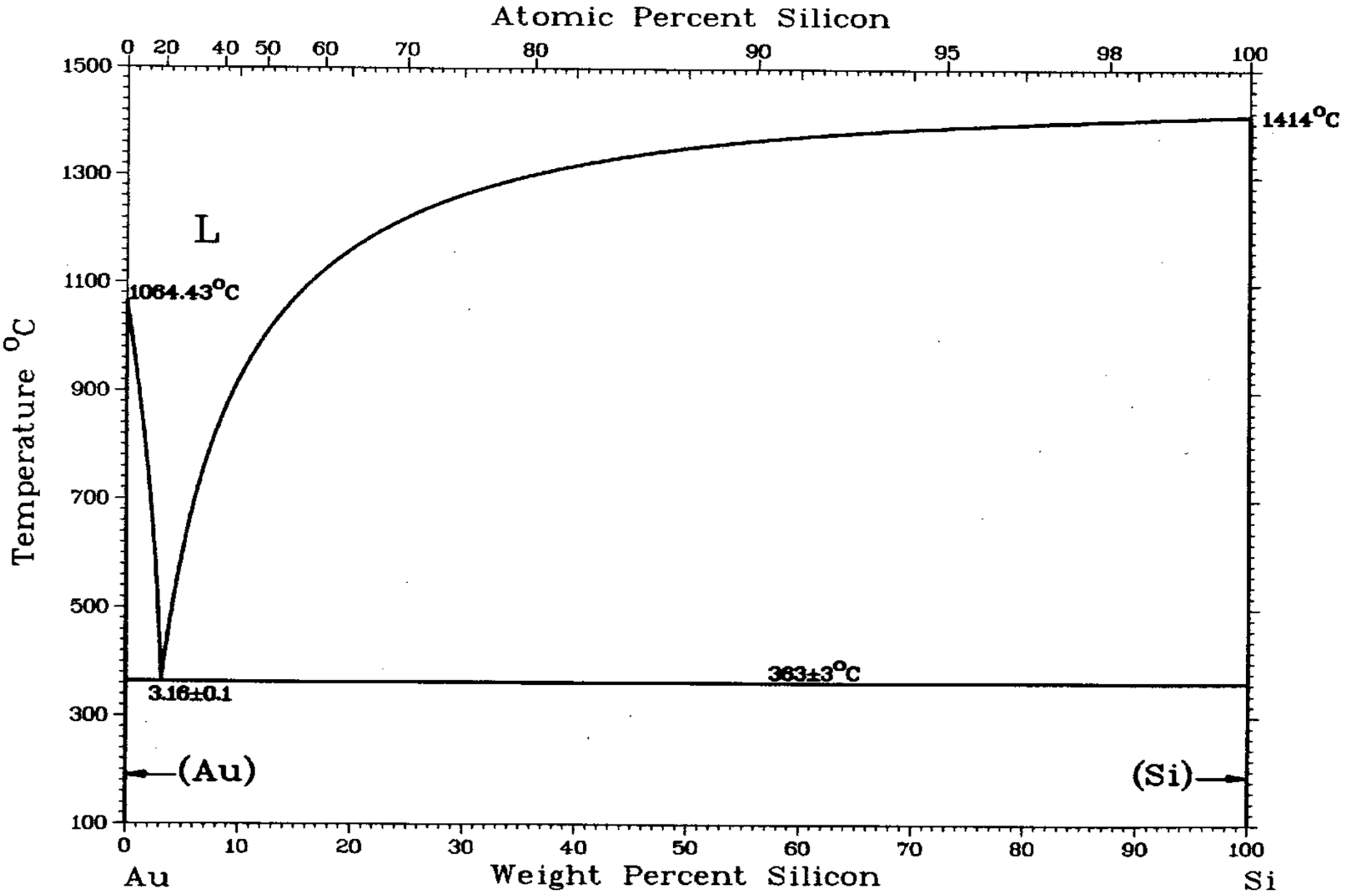
4.8 - Casos limites de eutéticos



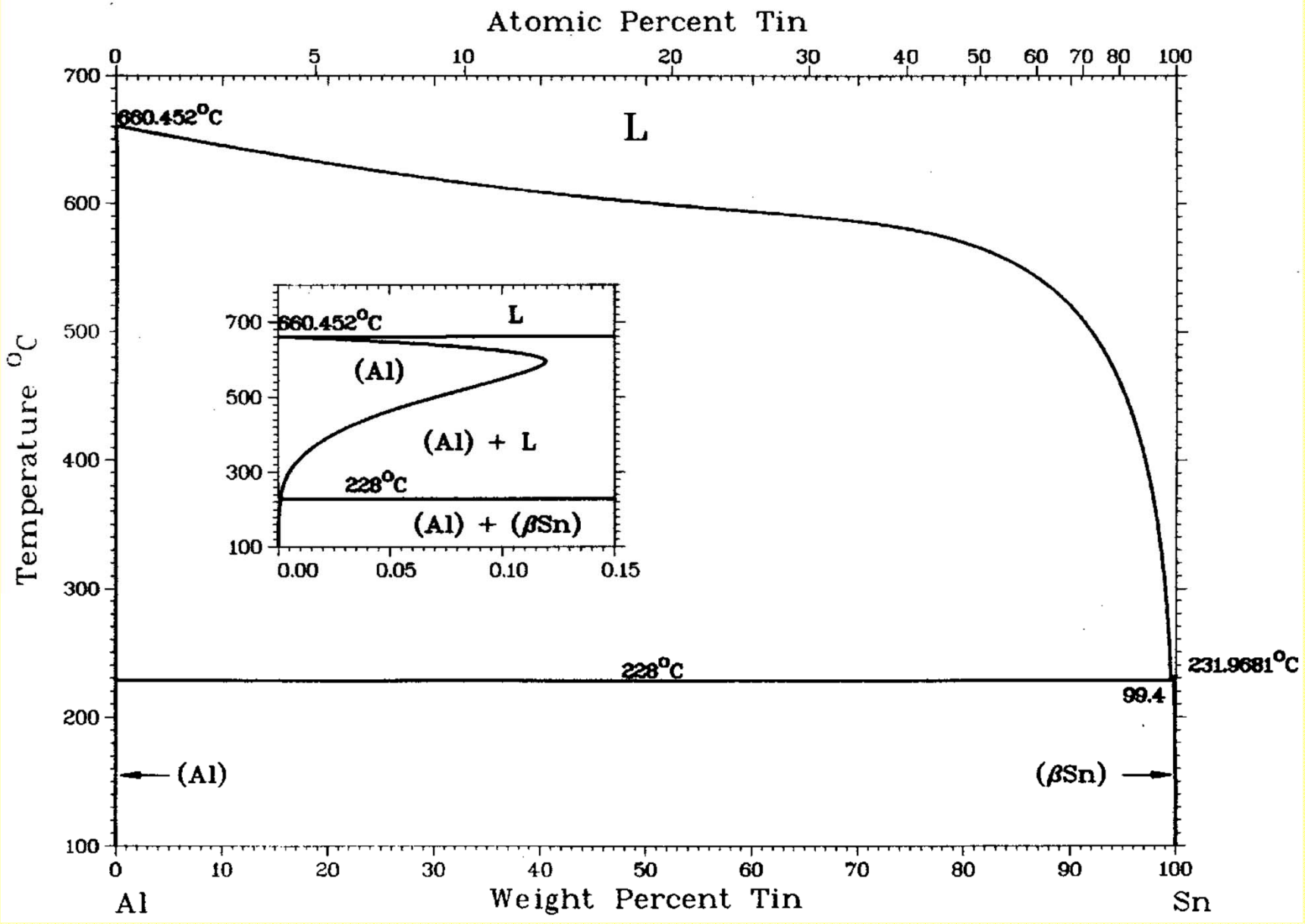
Ag-Mo


Atomic Percent Molybdenum
0
10
20
30
40
50
60
70
80
90
100
2900
2700
2500
2300
2100
1900
1700
1500
1300
1100
900
Temperature °C
964
961.93°C
960
956
L
958.5±2°C
(Ag)
0.13
0.34
0
0.4
0.8
L
2623°C
(Mo)
961.93°C
(Ag)
958.5±2°C
Ag
Weight Percent Molybdenum
Mo

Au-Si


Atomic Percent Silicon
0 20 40 50 60 70 80 90 95 98 100
1500
1300
1100
900
700
500
300
100
Temperature °C
L
1064.43°C
1414°C
363±3°C
3.16±0.1
(Au)
(Si)
0 10 20 30 40 50 60 70 80 90 100
Au
Weight Percent Silicon
Si

Al-Sn


Atomic Percent Tin
0
5
10
20
30
40
50
60
70
80
100
700
600
500
400
300
200
100
660.452°C
L
Temperature °C
(Al)
(Al) + L
228°C
(Al) + (βSn)
0.00
0.05
0.10
0.15
231.9681°C
99.4
(Al)
(βSn)
0
10
20
30
40
50
60
70
80
90
100
Al
Weight Percent Tin
Sn