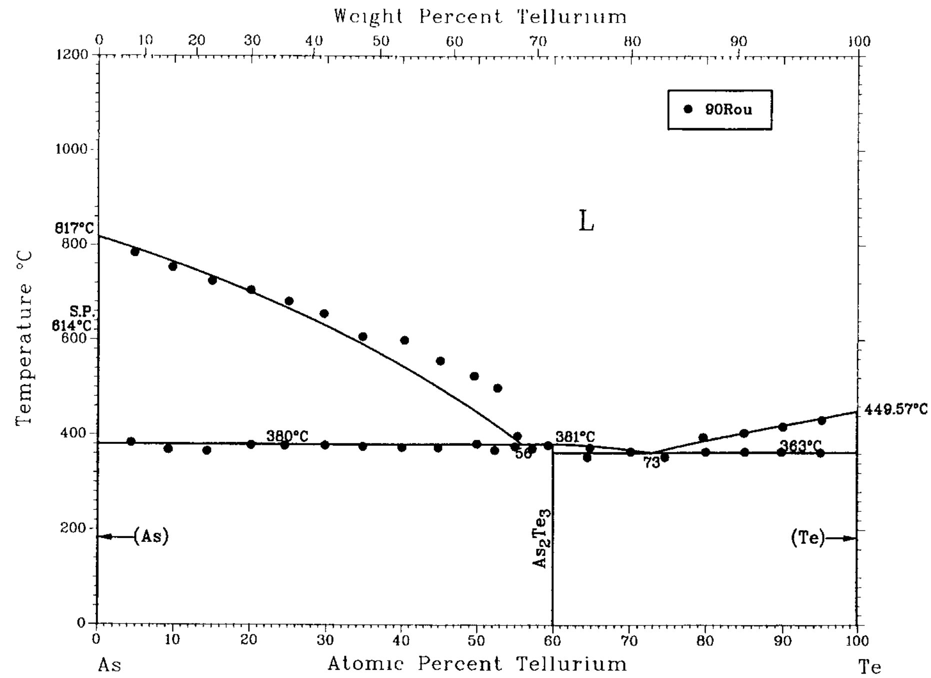

Fig. 1 As-Te phase diagram.

tide)$_2$ (chalcogen)$_3$ phases (see [Massalski2]) are essentially line compounds.

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Au-Sn (Gold-Tin)

H. Okamoto

The Au-Sn phase diagram in [Massalski2] was adopted from [87Oka] but included minor modifications with regard to the formation reactions of β and ζ phases from [87Leg]. Even so, the boundaries of these phases and possible eutectoidal de-

Table 1 Au-Sn Crystal Structure Data

Phase	Composition, at.% Sn	Pearson symbol	Space group	Strukturbericht designation	Prototype
(Au)	0 to 6.6	*cF*4	$Fm\bar{3}m$	*A*1	Cu
β or $Au_{10}Sn$	8.2 to 9.1	*hP*16	$P6_3/mmc$	$D0_{24}$	Ni_3Ti
ζ	9.1 to 17.6	*hP*2	$P6_3/mmc$	*A*3	Mg
ζ or Au_5Sn	16.7	*hR*6	*R*3	...	...
δ or AuSn	50 to 50.5	*hP*4	$P6_3/mmc$	$B8_1$	NiAs
ε or $AuSn_2$	66.7	*oP*24	*Pbca*	...	...
η or $AuSn_4$	80	*oC*20	*Aba*2	$D1_c$	$PdSn_4$
(βSn)	99.8 to 100	*tI*4	$I4_1/amd$	*A*5	βSn
(αSn)	99.994 to 100	*cF*8	$Fd\bar{3}m$	*A*4	C(diamond)

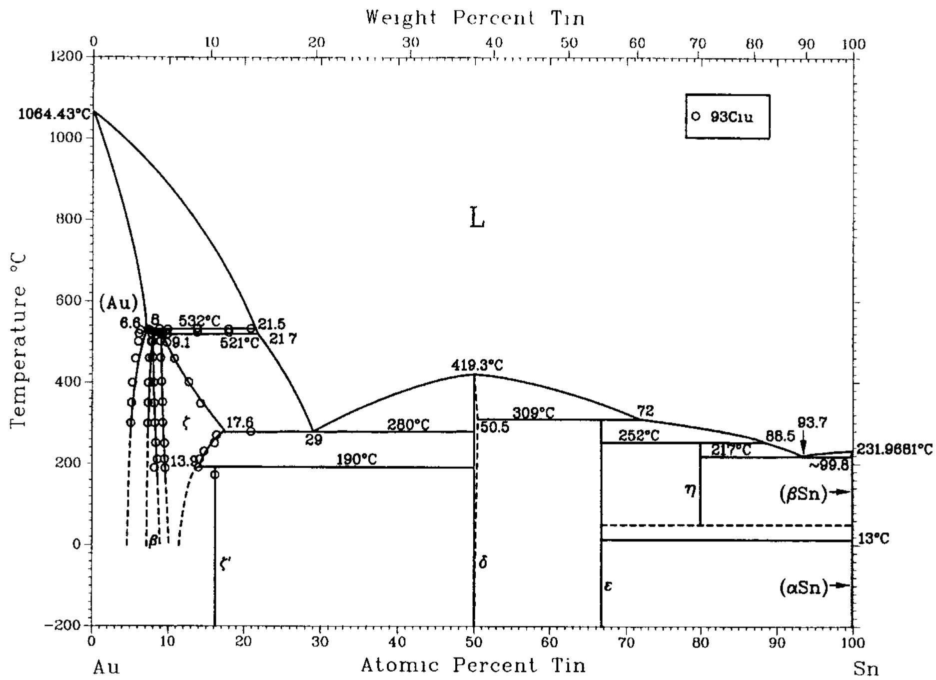

Fig. 1 Au-Sn phase diagram.

compositions at roughly 250 and 60 °C, respectively, were still only approximate.

The phase relationship in the Au-rich region, shown in Fig. 1, was clarified by [93Ciu], who showed with DTA, DSC, and EPMA, that the β and ζ phases do not decompose above 200 °C, which was the lowest temperature of measurement. The possibility of decomposition of these phases below 200 °C cannot be excluded because the existence of phases with very similar compositions (~1 at.% difference in Fig. 1) in a wide temperature range (> 500 °C) is unlikely [93Oka]. Au_5Sn forms by a peritectoid reaction at 190 °C as shown in Fig. 1 rather than by a congruent reaction from ζ as earlier reported by [74Osa].

Current Au-Sn crystal structure data are given in Table 1.

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93Ciu: J. Ciulik and M.R. Notis, *J. Alloy. Compd., 191*, 71-78 (1993).

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Ce-Rh (Cerium-Rhodium)

H. Okamoto

The Ce-Rh phase diagram in [Massalski2] was drawn by combining data from [Moffatt] and [73Gha]. The possible existence of seven compounds (six compounds shown in Fig. 1 plus Ce_4Rh_3) was indicated. The liquidus boundaries were very uncertain and were derived by assuming similarity to the Nd-Rh diagram, which has not been well established.

The Ce-Rh phase diagram shown in Fig. 1 was determined by [93Pal] through the composition range 0 to 70 at.% Rh by means of metallography, XRD, DTA, and electron microscopy. The β to α transition of Ce_5Rh_3 is from [Massalski2]. XRD examination by [93Pal] of variously heat-treated alloys of several compositions near Ce_4Rh_3 indicated that Ce_4Rh_3 does not exist.

Ce-Rh crystal structure data with revisions from [93Pal] are shown in Table 1. The tetragonal crystal structure of Ce_5Rh_3 reported by [93Pal] is tentatively assigned to αCe_5Rh_3, as a cu-