

# O-Ti (Oxygen-Titanium)

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Figure 1 shows the Ti-O phase diagram adopted in [Masalski2] from [1987Mur]. This diagram was based on numerous experimental data, but the phase boundaries drawn with dashed lines were still speculative because of contradictory data or lack of data. Figure 2 shows the Ti-O phase diagram calculated by [1997Fis]. Many phases shown in [1987Mur] were not considered in the thermodynamic model because of insufficient information available on these phases. Figure 3 shows another Ti-O phase diagram calculated by [1999Wal]. Figure 4 is an enlargement of Fig. 3 from 58 to 68 at.% O showing the existence of ten  $Ti_nO_{2n-1}$  phases in this narrow composition range.

Figures 1 to 3 are similar, but different in details. For example, the  $(\beta Ti)/(\alpha Ti)$  phase boundaries are retrograde

according to [1997Fis], whereas they are not retrograde according to [1987Mur] and [1999Wal]. Existing experimental data are too scattered to select the best diagram. The difference in the existence of  $\beta TiO$  and many other phases is also noticeable. These differences among the phase diagrams of [1987Mur], [1997Fis], and [1999Wal] clearly suggest the areas where further experimental work is needed.

## References

- 1987Mur:** J.L. Murray and H.A. Wriedt: *Bull. Alloy Phase Diagrams*, 1987, vol. 8 (2), pp. 148-65.  
**1997Fis:** E. Fischer: *J. Phase Equilibrium*, 1997, vol. 18 (4), pp. 338-43.  
**1999Wal:** P. Waldner and G. Eriksson: *Calphad*, 1999, vol. 23 (2), pp. 189-218.

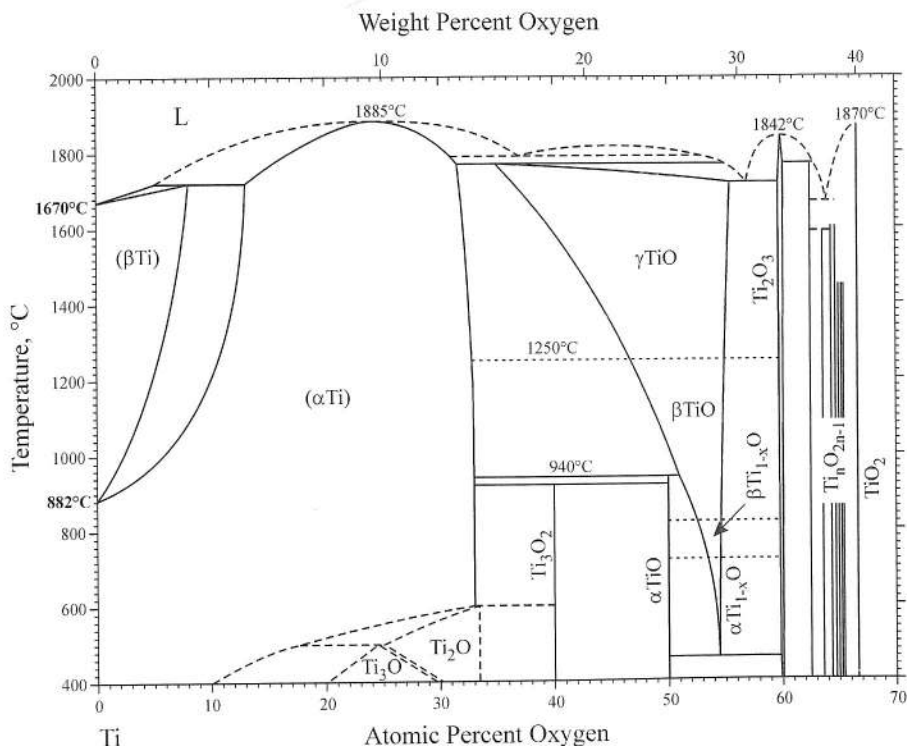


Fig. 1 Ti-O phase diagram assessed by [1987Mur]

Section III: Supplemental Literature Review

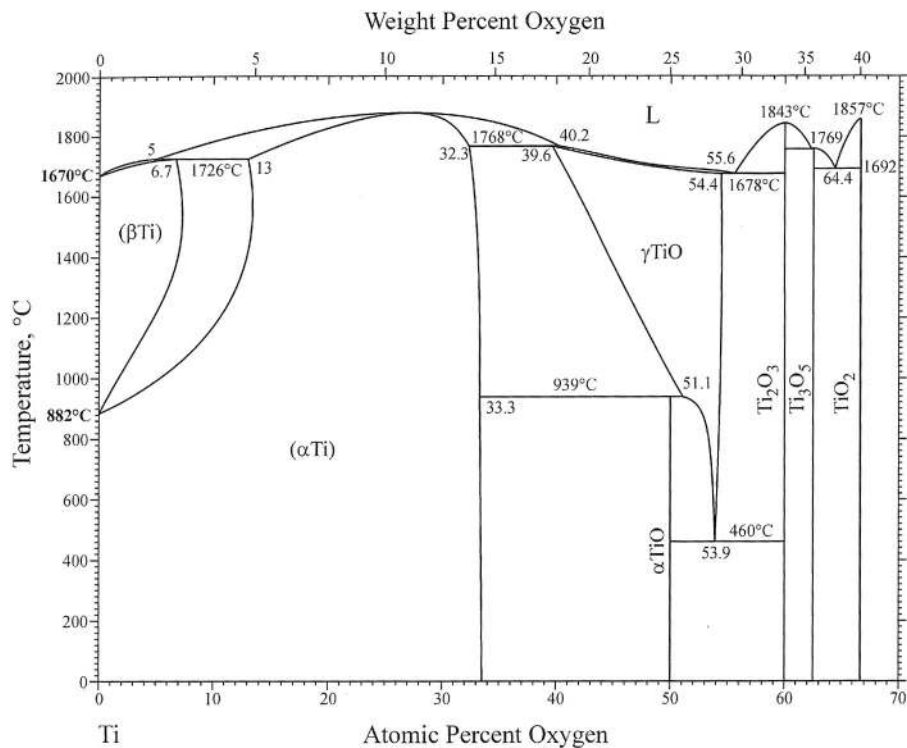


Fig. 2 Ti-O phase diagram calculated by [1997Fis]

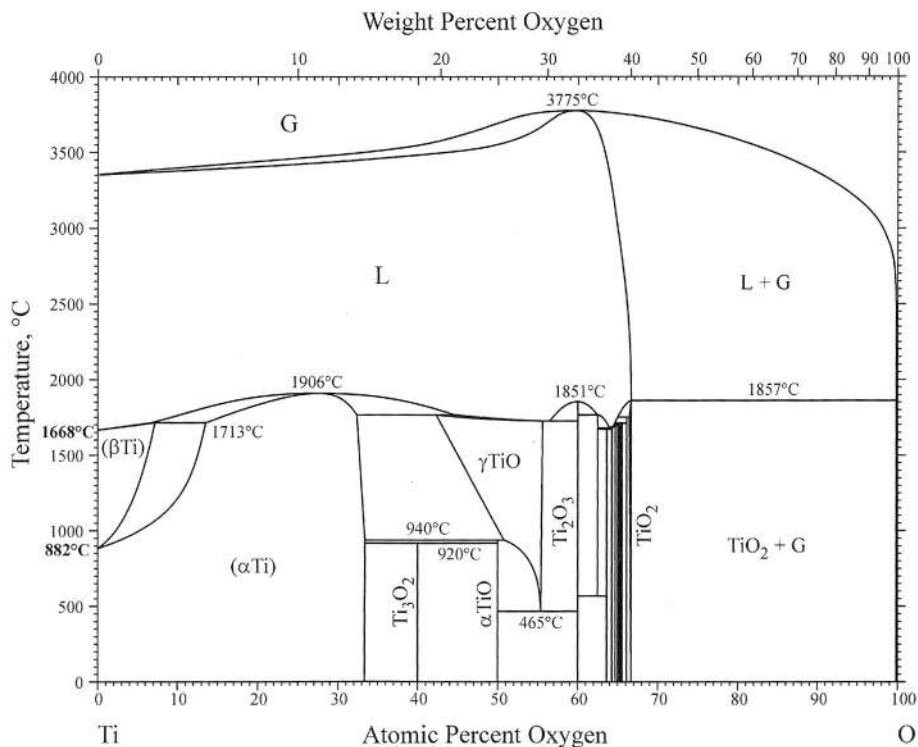


Fig. 3 Ti-O phase diagram calculated by [1999Wal]

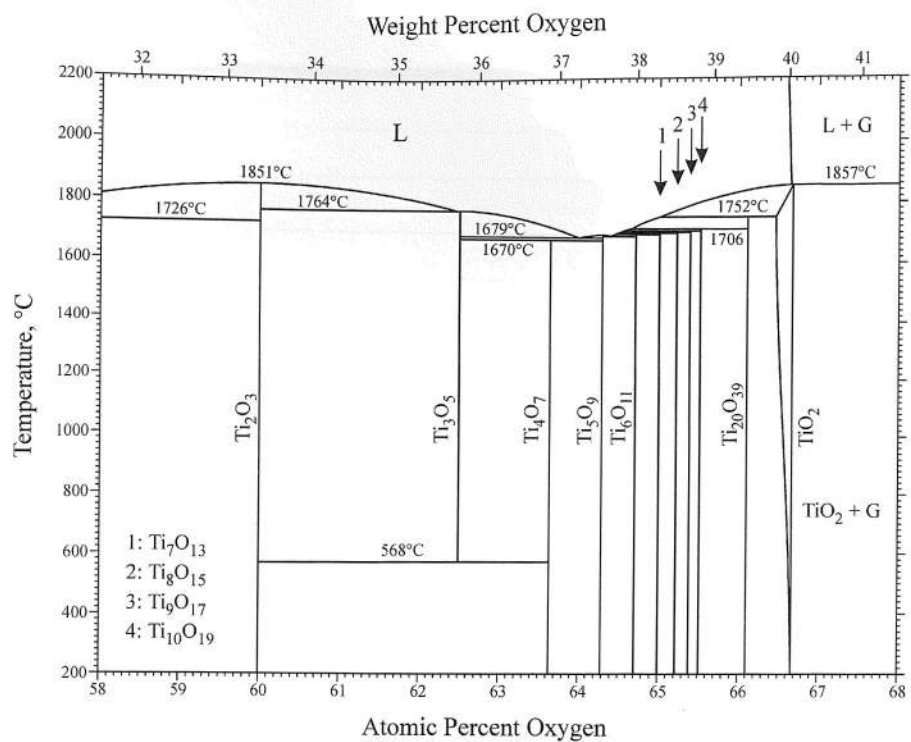


Fig. 4 Enlargement of Fig. 3 from 58 to 68 at.% O