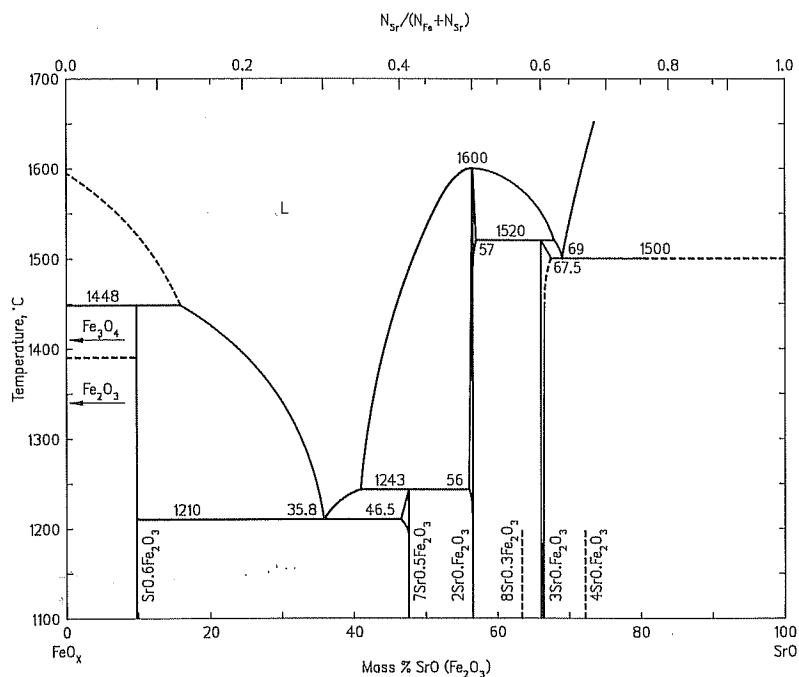


## FeO<sub>x</sub>-SrO

**Fig. 3.109.** FeO<sub>x</sub>-SrO phase diagram after Batti [1]. Additional compounds with the formulas Sr<sub>4</sub>Fe<sub>3</sub>O<sub>10-x</sub>, Sr<sub>3</sub>Fe<sub>2</sub>O<sub>7-x</sub>, Sr<sub>2</sub>FeO<sub>4-x</sub> and SrFeO<sub>3-x</sub>, containing an amount of Fe(IV) under 1 atm pO<sub>2</sub> and also at higher oxygen pressures, have been reported and described in numerous works due to Gallagher et al. [2-4], Brisi, Rolando [5] and Takeda et al. [6]. The homogeneity of the SrO·6Fe<sub>2</sub>O<sub>3</sub> phase at approx. 1150 °C after Akselrod et al. [7] ranges from 9.61 to 9.91 mass % SrO. The positions of additional compounds, but without any Fe(IV) content, are shown in the figure with dashed lines.

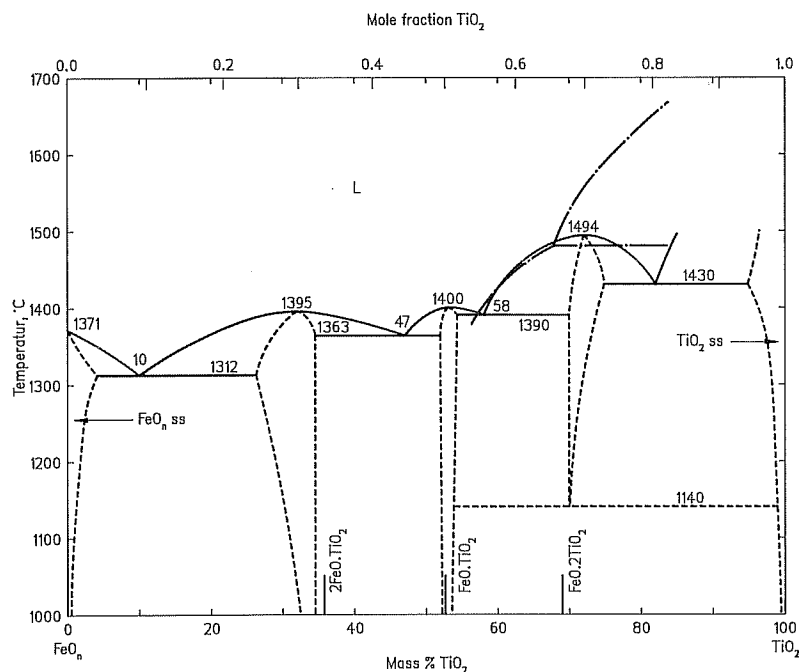
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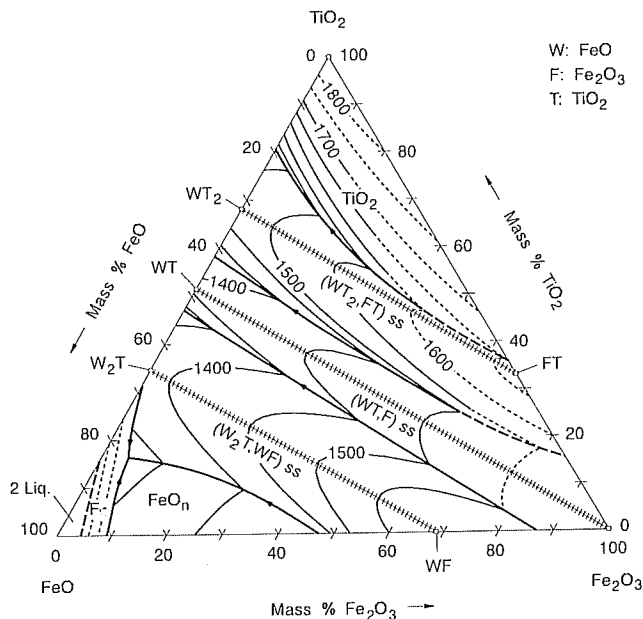
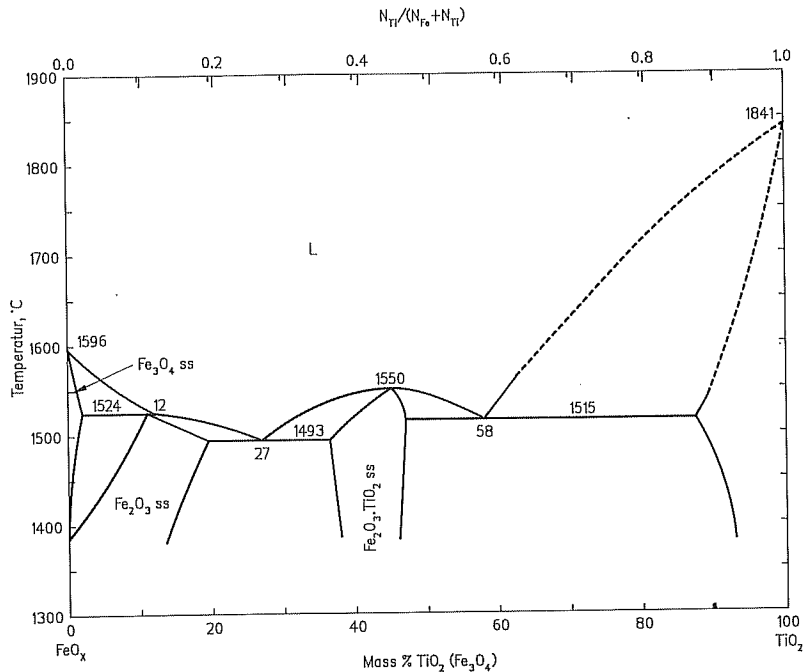


## FeO<sub>x</sub>-TiO<sub>2</sub>

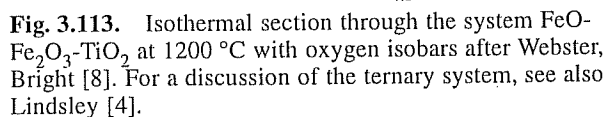
**Fig. 3.110.** FeO<sub>n</sub>-TiO<sub>2</sub> system under reducing conditions after MacChesney, Muan [1] projected on the FeO-TiO<sub>2</sub> section. After Grau [2], and earlier Smith, Bell [3], the FeO·2TiO<sub>2</sub> phase melts incongruently (dash-dot lines in the figure). The lower stability limit of the FeO·2TiO<sub>2</sub> phase (1140 °C) is as reported by Lindsley [4]. For composition of iron titanium oxides in equilibrium with metallic iron at 1000, 11300 and 1300 °C, see also Simons, Woermann [5].



**Fig. 3.111.** FeO<sub>x</sub>-TiO<sub>2</sub> system in air projected on the Fe<sub>3</sub>O<sub>4</sub>-TiO<sub>2</sub> section after MacChesney, Muan [6]. The composition of liquid and crystalline phases at liquidus temperatures is close to the Fe<sub>3</sub>O<sub>4</sub>-TiO<sub>2</sub> section [6].



**Fig. 3.112.** Liquidus surface in the system  $\text{FeO}-\text{Fe}_2\text{O}_3-\text{TiO}_2$  after Taylor [7]. The liquidus temperatures on the  $\text{FeO}-\text{TiO}_2$  section are slightly higher than those reported by MacChesney, Muan [1].



Phase relations in the sub-solidus region of the ternary system Fe-O-Ti between 700 and 1220 °C have been investigated by Grey et al. [9, 10], Saha, Biggar [11], Shakhin et al. [12], Borowiec, Rosenqvist [13, 14] and Gupta et al. [15]. The sub-solidus equilibria in the  $\text{Ti}_2\text{O}_5\text{-Fe}_2\text{O}_3\text{-TiO}_2$  and  $\text{FeO-Fe}_2\text{O}_3\text{-2FeO-TiO}_2$  sections have been investigated by Grey, Merritt [16], Lindsley [17] and Prince [18]. The thermodynamics of the ternary system Fe-O-Ti and several  $\log p\text{O}_2$  vs.  $N_{\text{Ti}}$

( $N_{\text{Fe}}+N_{\text{Ti}}$ ) diagrams between 1300 and 1600 °C have been reported by Sticher, Schmalzried [19]. For a recent thermodynamic assessment of the system FeO-TiO<sub>2</sub> and Fe-O-Ti, see Eriksson, Pelton [20, 21].

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**Fig. 3.114.**  $\text{FeO}_n\text{-ZrO}_2$  phase diagram in contact with iron after Fischer, Hoffmann [1].

