

System B – Cr – O

Determination of Gibbs Energies of Formation of  $\text{Cr}_3\text{B}_4$ ,  $\text{CrB}_2$ , and  $\text{CrB}_4$  by Electromotive Force Measurement Using Solid Electrolyte,

H. Yamamoto, Y. Wada, K. Nishiyama, Y. Taniguchi, A. Nozaki, and M. Morishita, Mater. Trans., Vo.61 (2020), 2357-2362.

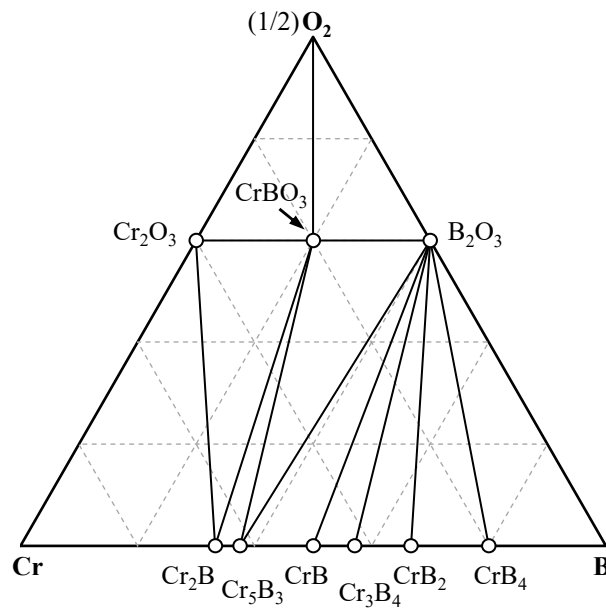


Fig. Phase relationships for the Cr–B–O ternary system at 1273 K.

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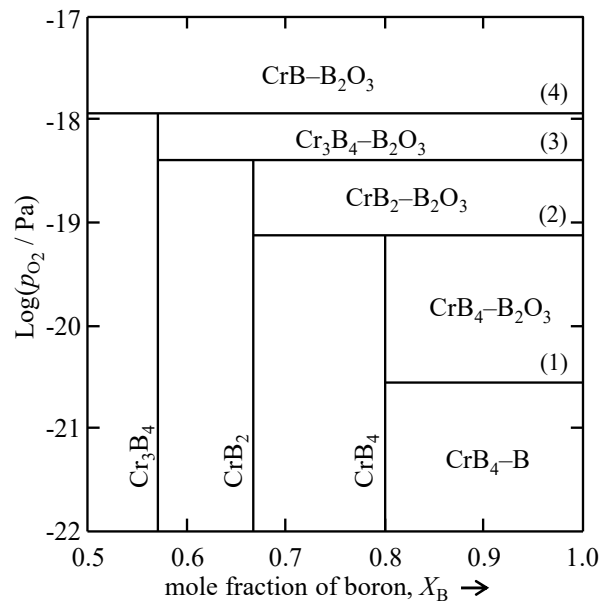


Fig. Composition-oxygen partial pressure diagram of the Cr–B–O ternary system at 1300 K.

System B - Mo - Ni

Isothermal Phase Diagram of the Ni - Mo - B System,  
S.Omori, Y.Hashimoto and K.Koyama,  
Kouon Gakkaishi, Vol.7 (1981), pp.162-166.

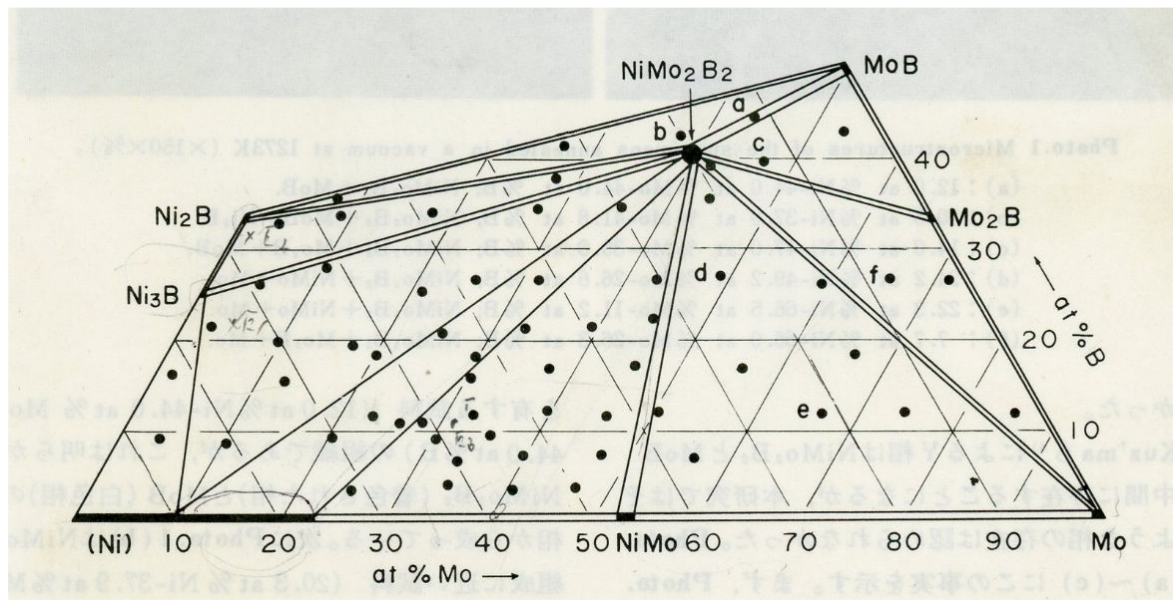


Fig. Isothermal Phase Diagram of the Ni - Mo - B System at 1273 K.

System B - Mo - Ni

Liquidus Surface of the Ni - Mo - B System,  
S.Omori, Y.Hashimoto and K.Koyama,  
Kouon Gakkaishi, Vol.7 (1981), pp.167-173.

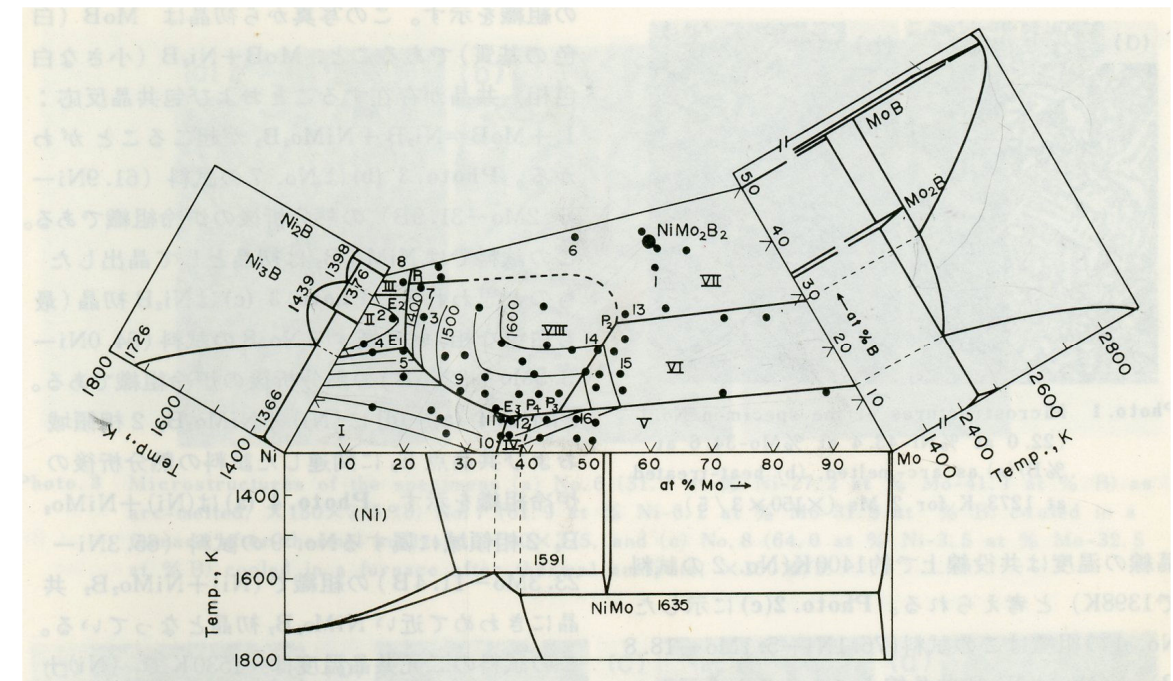


Fig. Liquidus surface of the Ni-Mo-B system in the lower boron region than the Ni<sub>3</sub>B-MoB quasi-binary system.

System B - Mo - Ni

Calculated Phase Diagram of the Ni - Mo - B Ternary System,

M.Morishita, K.Koyama, S.Yagi and G. Zhang,

J. Alloys and Compounds, Vol.314, (2001), pp.214-218.

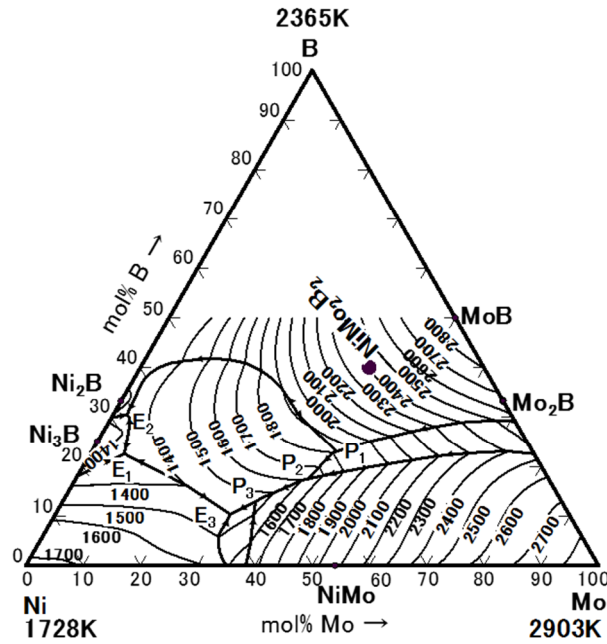


Fig. The calculated Ni-Mo-B ternary phase diagram in the low boron composition range

System B - Mo - Ni - O

Phase Relationship in the Ni - Mo - B - O System and Oxidation Property of a Ni - NiMo<sub>2</sub>B<sub>2</sub> Two-Phase Alloy,

M.Morishita, K.Koyama, K.Maeda and G. Zhang,

J. Japan Inst. Met., Vol.65 (2001), pp.279-287.

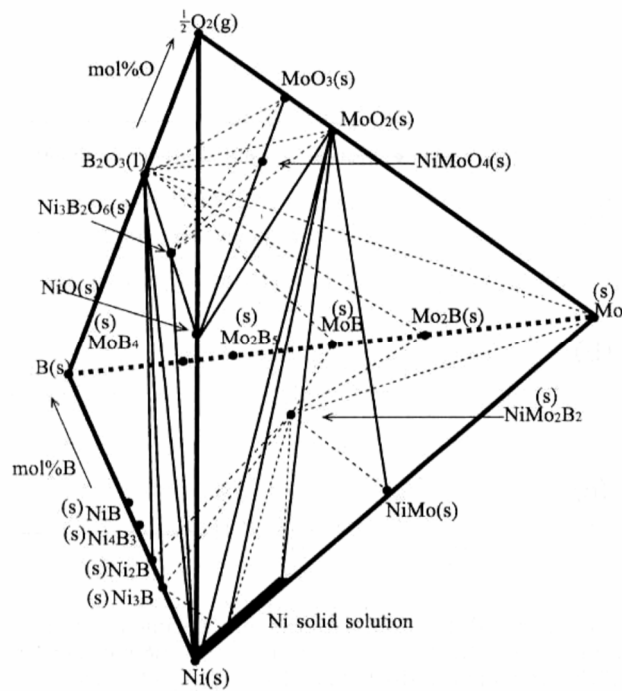


Fig. Phase relationship in the B-Mo-Ni O system at 973 K.

System B - Mo - O

Determination of Gibbs Energy of Formation of Molybdenum-Boron Binary System by Electromotive Force Measurement Using Solid Electrolyte

H. Yamamoto, M. Morishita, T. Yamamoto and K. Furukawa,

Metallurgical and Materials Transactions B, Vol. 42B (2011), pp. 114-120.

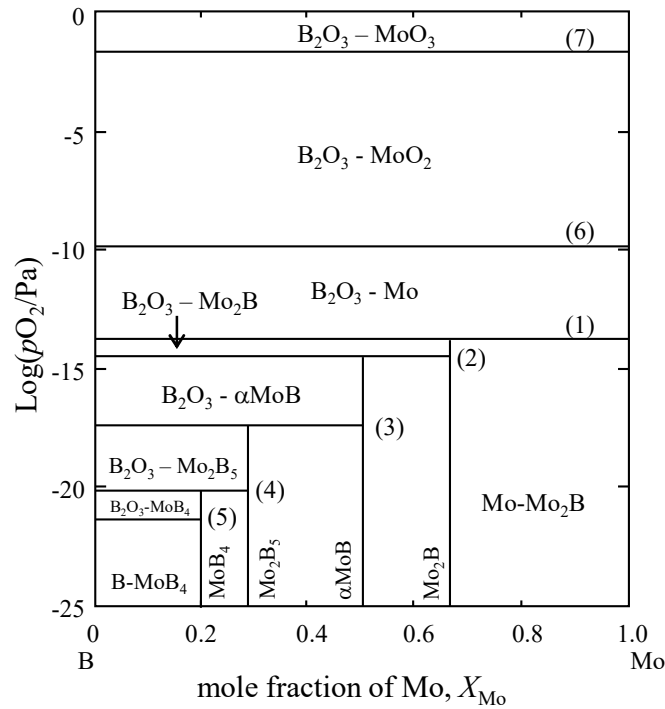


Fig. Composition-oxygen partial pressure diagram of the molybdenum-boron-oxygen system at 1273 K. (1) Mo-Mo<sub>2</sub>B-B<sub>2</sub>O<sub>3</sub>, (2) Mo<sub>2</sub>B-MoB-B<sub>2</sub>O<sub>3</sub>, (3) MoB-Mo<sub>2</sub>B<sub>5</sub>-B<sub>2</sub>O<sub>3</sub>, (4) Mo<sub>2</sub>B<sub>5</sub>-MoB<sub>4</sub>-B<sub>2</sub>O<sub>3</sub>, (5) MoB<sub>4</sub>-B<sub>2</sub>O<sub>3</sub>, (6) Mo-MoO<sub>2</sub>-B<sub>2</sub>O<sub>3</sub>, (7) MoO<sub>2</sub>-MoO<sub>3</sub>-B<sub>2</sub>O<sub>3</sub> ternary phase equilibria.

System B - Ni

Phase Diagram of Binary Nickel - Boron System at Nickel Side,

S. Omori, Y.Hashimoto, S.Nakamura, K.Hidaka and Y.Kohira,

J. Japan Soc. Powder Powder Metallurgy, Vo.18 (1971), pp.132-135.

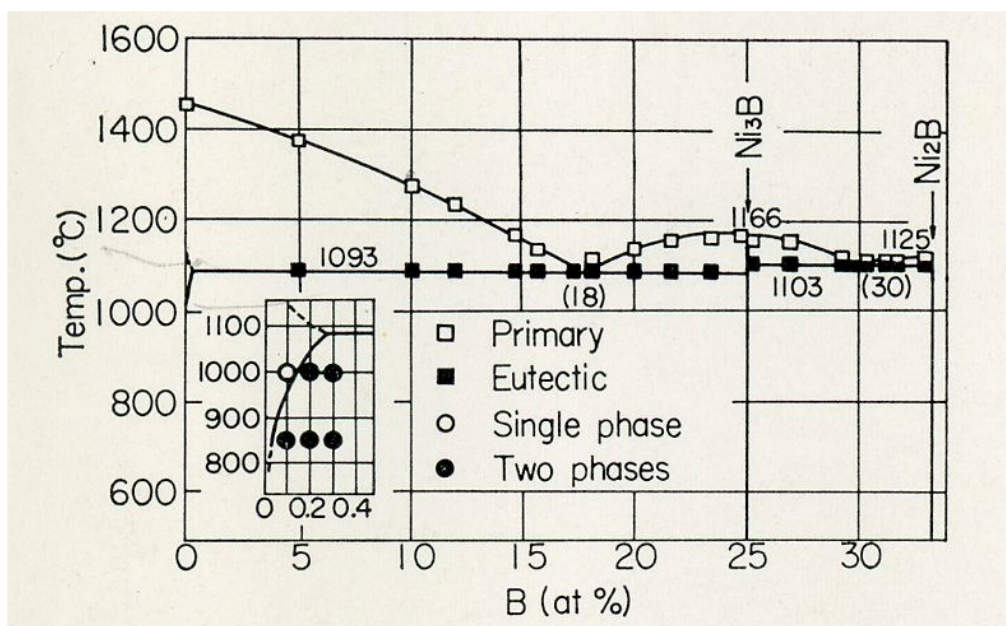


Fig. Phase diagram of Ni - B system (up to 33.3at%B).

System B - Ni - O

Composition-partial oxygen pressure diagram for Ni-B-O system

H. Yamamoto and M. Morishita,

J. Alloys and Comp., Vol. 438 (2007), pp. L1-L3.

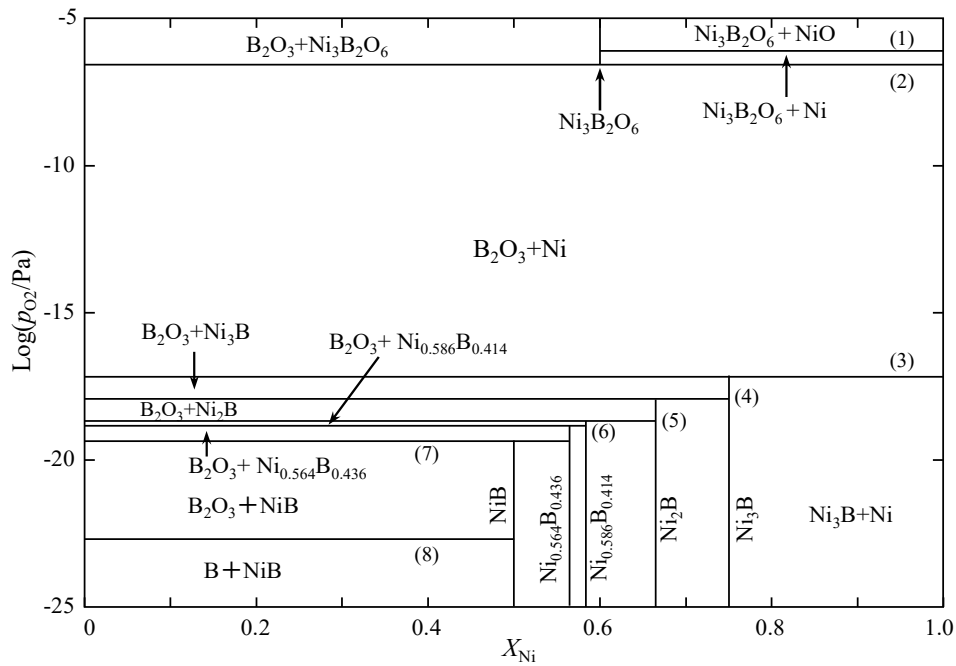


Fig. Composition-oxygen partial pressure diagram for the Ni-B-O system at 1223 K. Horizontal lines represent the equilibrium regions as follows:

(1): Ni-NiO-Ni<sub>3</sub>B<sub>2</sub>O<sub>6</sub>, (2): Ni-Ni<sub>3</sub>B<sub>2</sub>O<sub>6</sub>-B<sub>2</sub>O<sub>3</sub>, (3): Ni-Ni<sub>3</sub>B-B<sub>2</sub>O<sub>3</sub>, (4): Ni<sub>3</sub>B-Ni<sub>2</sub>B-B<sub>2</sub>O<sub>3</sub>, (5): Ni<sub>2</sub>B-Ni<sub>0.586</sub>B<sub>0.414</sub>-B<sub>2</sub>O<sub>3</sub>, (6): Ni<sub>0.586</sub>B<sub>0.414</sub>-Ni<sub>0.564</sub>B<sub>0.436</sub>-B<sub>2</sub>O<sub>3</sub>, (7): Ni<sub>0.564</sub>B<sub>0.436</sub>-NiB-B<sub>2</sub>O<sub>3</sub>, and (8): B-B<sub>2</sub>O<sub>3</sub>-NiB.

System B - W - Ni

Calculated Phase Diagram of the Ni - W - B Ternary System,

M.Morishita, K.Koyama, K.Maeda and G. Zhang,

Materials Transactions of the Japan Institute of Metals, Vol.40, (1999), pp.600-605.

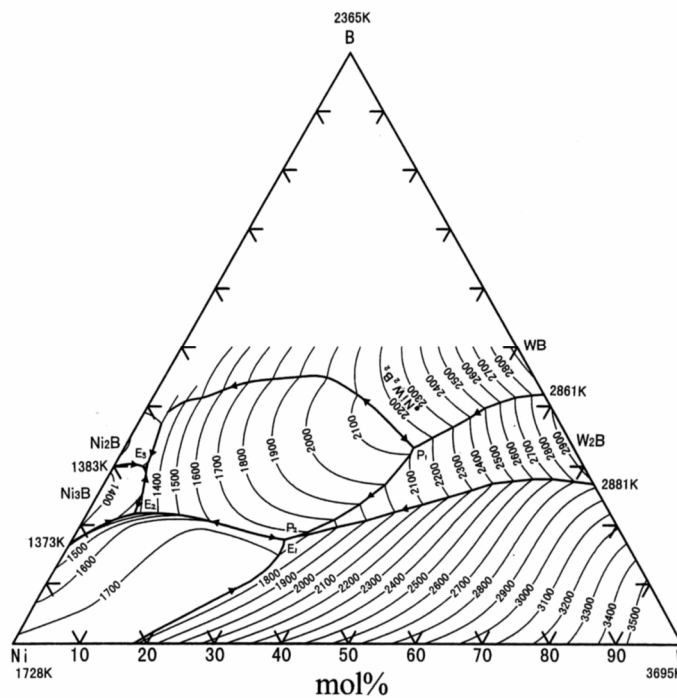


Fig. The calculated Ni-W-B ternary phase diagram in the low boron composition range

System B - W - O

Determination of Gibbs Energy of Mixing of Tungsten-Boron Binary System by Electromotive Force Measurement Using Solid Electrolyte,

H. Yamamoto, M. Morishita, Y. Miyake, and S. Hiramatsu,

Metallurgical and Materials Transactions B, Vol. 48(2017), pp.1703-1714.

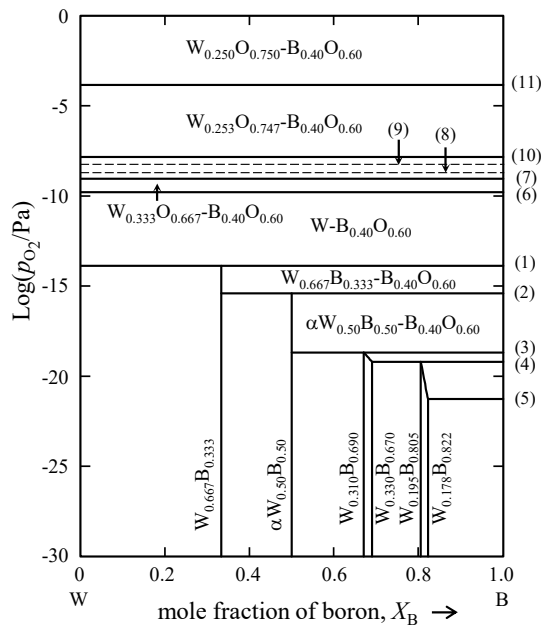


Fig. Composition-oxygen partial pressure diagram of the W-B-O ternary system at 1273 K (1000 °C).

System C - Ni - O - Ti

Phase Relationships and the Partial Phase Diagram of the Ni - Ti - C - O System,

Y.Hashimoto, S.Omori, K.Koyama and Y. Arami,

Kouon Gakkaishi, Vol.7 (1981), pp.255-263.

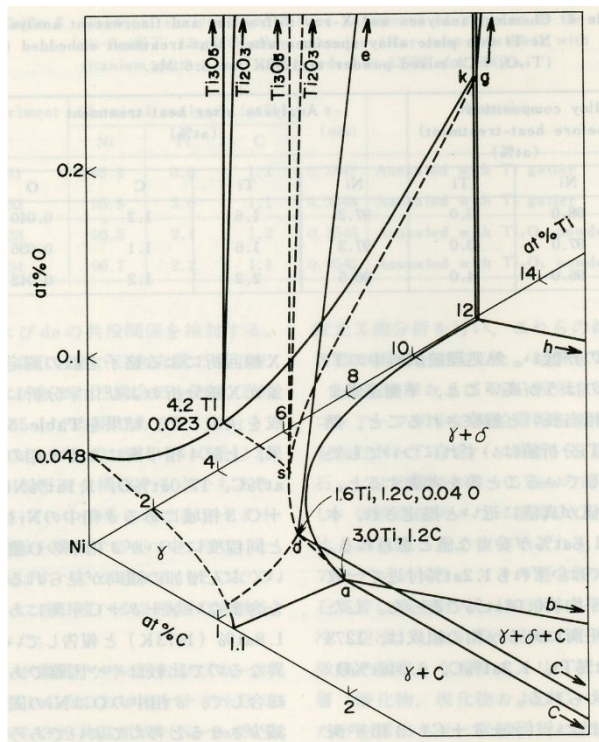


Fig. Isothermal phase diagram in the Ni-rich region of the Ni-Ti-C-O system at 1273 K (Partially drawn).

System C - O - Ti

Partial Phase Diagram of the Ti-C-O System in the High Carbon and High Oxygen Region,  
Y.Hashimoto, S.Omori, K.Koyama and Y. Arami,  
Kouon Gakkaishi, Vol.7 (1981), pp.209-215.

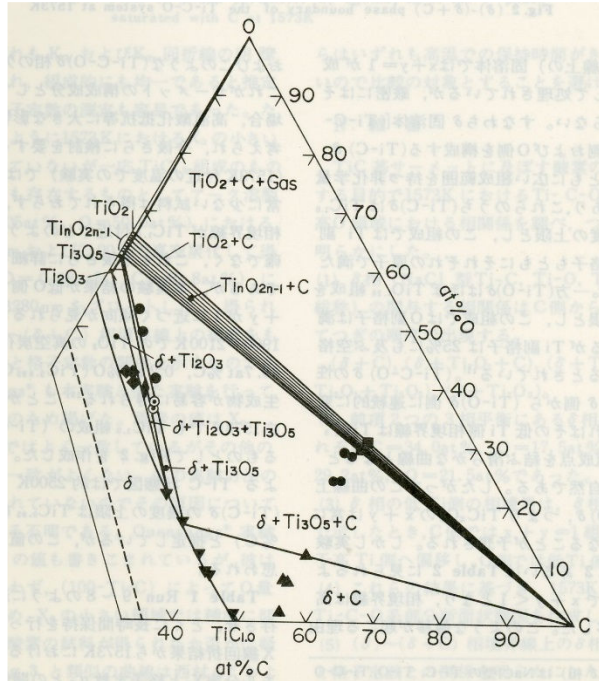


Fig. Isothermal diagram of the Ti-C-O system at 1573 K.

System Fe - Mo - O

Determination of Standard Gibbs Energies of Formation of  $\text{Fe}_2\text{Mo}_3\text{O}_{12}$ ,  $\text{Fe}_2\text{Mo}_3\text{O}_8$ ,  $\text{Fe}_2\text{MoO}_4$ , and  $\text{FeMoO}_4$  of the Fe-Mo-O Ternary System and  $\mu$  Phase of the Fe-Mo Binary System by Electromotive Force Measurement Using a  $\text{Y}_2\text{O}_3$ -Stabilized  $\text{ZrO}_2$  Solid Electrolyte  
K.Koyama, M.Morishita, T.Harada and N.Maekawa,  
Metallurgical and Materials Transactions, Vol.B34, (2003), pp.653-659.

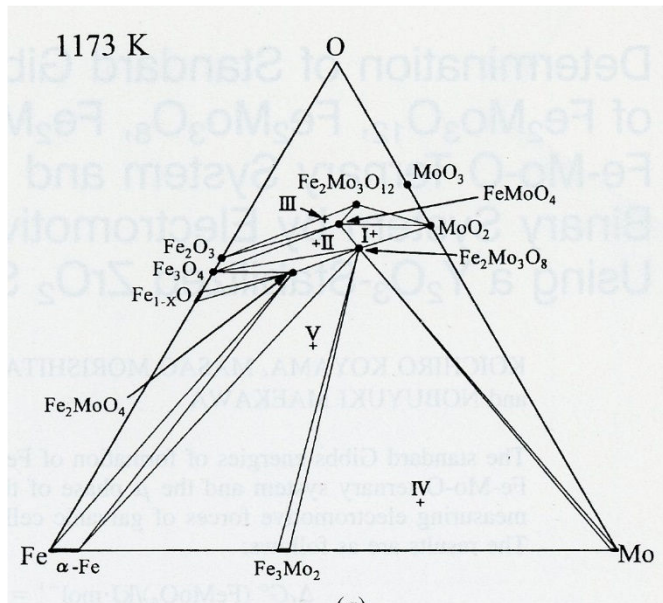


Fig. The compositions of the electrode used for the electromotive force measurements.

System Fe - Mo - O

Determination of Standard Gibbs Energies of Formation of  $\text{Fe}_2\text{Mo}_3\text{O}_{12}$ ,  $\text{Fe}_2\text{Mo}_3\text{O}_8$ ,  $\text{Fe}_2\text{MoO}_4$ , and  $\text{FeMoO}_4$  of the Fe—Mo—O Ternary System and  $\mu$  Phase of the Fe—Mo Binary System by Electromotive Force Measurement Using a  $\text{Y}_2\text{O}_3$ -Stabilized  $\text{ZrO}_2$  Solid Electrolyte

K.Koyama, M.Morishita, T.Harada and N.Maekawa,

Metallurgical and Materials Transactions, Vol.B34, (2003), pp.653-659.

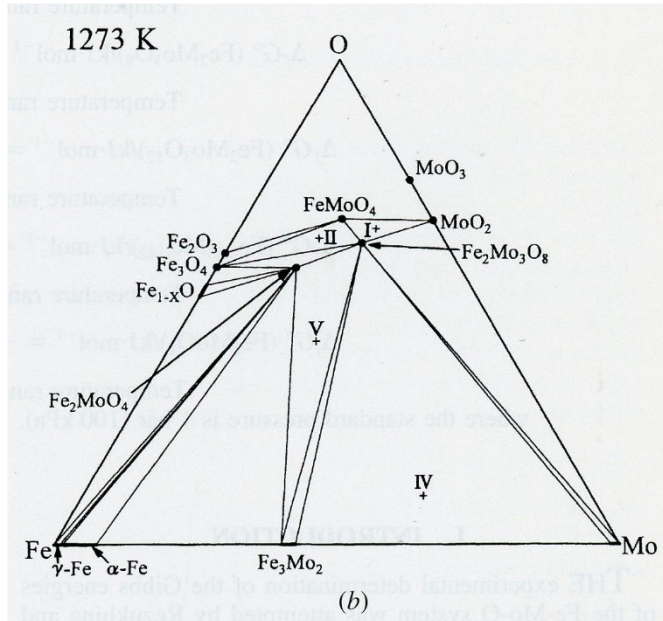


Fig. The compositions of the electrode used for the electromotive force measurements.

System KCl - LiCl -  $\text{MgCl}_2$

Phase Diagram of LiCl-KCl- $\text{MgCl}_2$  Ternary System in Low  $\text{MgCl}_2$  composition,

M.Morishita, M. Murase and K.Koyama,

J. Japan Inst. Met., Vol.59 (1995), pp.799-805.

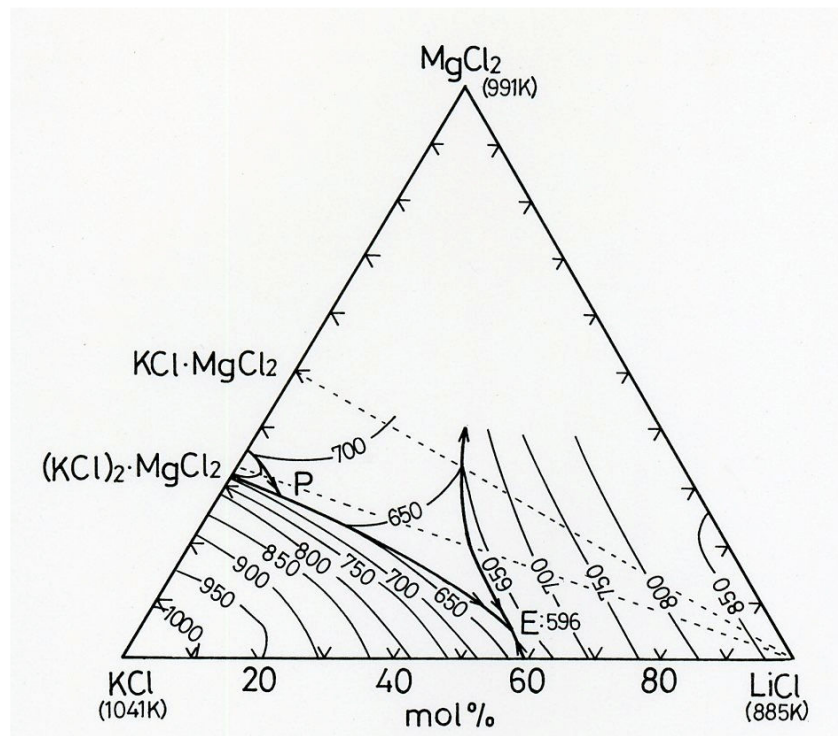


Fig. Phase diagram of the LiCl-KCl- $\text{MgCl}_2$  ternary system in low  $\text{MgCl}_2$  composition.



System Mo - Ni - O

Calorimetric Study of Nickel Molybdate: Heat Capacity, Enthalpy and Gibbs Energy of Formation,  
M.Morishita and A.Navrotsky,  
Journal of the American Ceramic Society, Vol.86, (2003), Vol.1927-1932.

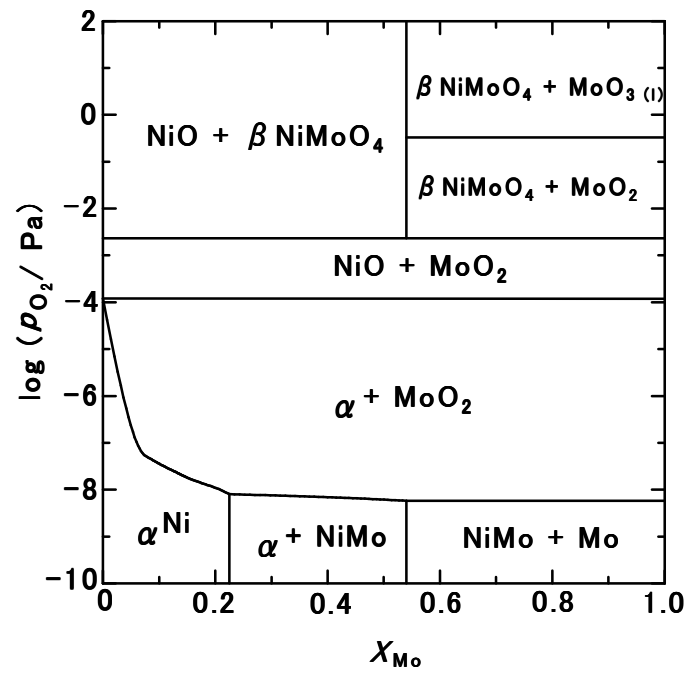


Fig. Composition-partial pressure diagram for the Ni-Mo-O ternary system at 1373 K.