Li-O (Lithium-Oxygen)

H. Okamoto

[Massalski2] reported the existence of Li_2O , Li_3O_2 , βLiO , αLiO , and LiO_2 , in the Li-O system, but did not show the Li-O phase diagram.

Earlier, [1968Kon] reported the Li_2O liquidus of the Li-O phase diagram in a narrow composition range from 0 to 0.7 at.% Li. [1960Hof], [1968Che], and [1979Yon] also reported the liquidus data.

[1992San] reviewed these reports and preferred the result of [1979Yon]. The phase diagram was shown in terms of $\log(\text{at.\% O})$ versus $1000/T(\text{K})$. The existence of Li_3O_2 and LiO_2 in the stable state was questioned.

Figure 1 shows the Li-O phase diagram at 1 bar total pressure calculated by [2011Cha]. The melting point of Li_2O was adopted from [1983Ort]. The decomposition temperature of LiO was derived from several sources in the literature. The calculated Li_2O liquidus agreed well with the experimental data shown in [1992San].

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Fig. 1 Li-O phase diagram [2011Cha]