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Al-Li-Mg-Sc (Aluminum-Lithium-Magnesium-Scandium)

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An isothermal section at 400 °C and at 0.2 mass% Sc was determined by [1993Fri] for this quaternary system.

Lower Order Systems

The phase diagrams of the constituent binary systems can be found in [Massalski2]. The Al-Li-Mg system was updated by [2005Gho]. The Al-Li-Sc system is reviewed in this issue. The Al-Mg-Sc system was updated by [2007Rag].

Quaternary Phase Equilibria

With starting metals of 99.99% Al, 99.8% Li, 99.96% Mg, and 99.986% Sc, [1993Fri] melted alloys in a resistance furnace under the cover of a flux. The alloys were annealed at 400 °C for 200 h. The phase equilibria were studied by x-ray powder diffraction and optical and transmission electron microscopy. The phase compositions were measured with x-ray spectral analyzer attached to a scanning electron microscope. The isothermal section constructed by [1993Fri] at 400 °C and at 0.2 mass% Sc is shown in Fig. 1. The Al-Li-Mg ternary compound Al_2MgLi (cubic, a = 2.031 nm) is in four-phase equilibrium with (Al), $ScAl_3$ and AlLi.

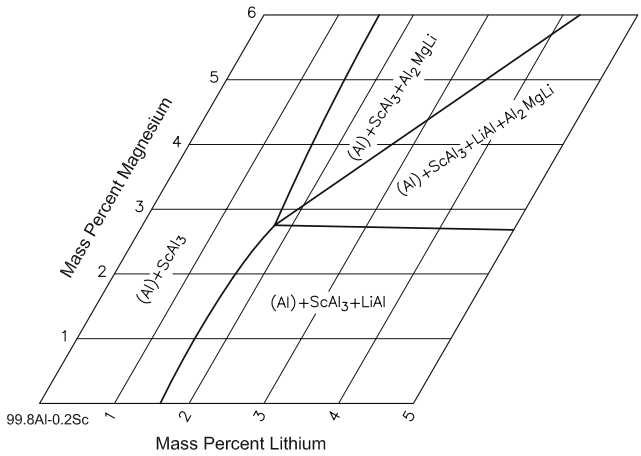

Fig. 1 Al-Li-Mg-Sc isothermal section at 400 °C and at 0.2 mass% Sc [1993Fri]

References

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