

论文摘要

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硅系合金氧化精炼过程的热力学分析

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摘 要: 应用亚正规熔体模型对Si-Al-Ca(-Fe)合金体系和 $\text{SiO}_2\text{-CaO-Al}_2\text{O}_3$ 渣系的热力学性质进行了理论研究, 计算出了上述体系组元的等活度曲线图。分析了1 550 °C温度条件下, 金属硅和75SiFe在氧化精炼过程中杂质元素的渣金平衡成分给出了铝和钙的平衡等浓度线。根据模型计算的结果, 分析了在相同实验条件下金属硅和75SiFe中杂质Al和Ca之间的关系。

关键字: 硅; 75SiFe; 氧化精炼; 热力学

Thermodynamic analysis on silicon alloy oxidation refining process

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Abstract: The thermodynamic properties of Si-Al-Ca(-Fe) alloy and $\text{SiO}_2\text{-CaO-Al}_2\text{O}_3$ slag system were calculated by a multicomponent sub-regular melt model, with given isoactivity curves of the components. With the model, the isoconcentration curves of Al and Ca in silicon and 75SiFe alloys during the oxidation refining process were calculated at 1 550 °C. The relations of the Al and Ca contents equilibrated at the same conditions between the silicon and 75SiFe alloys were calculated.

Key words: silicon; 75SiFe; oxidation refining; thermodynamics

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