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### 研究论文

## 700℃ 熔盐电解制备固态钛铁合金化合物

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### 摘要:

采用熔盐电解法, 在700℃的NaCl--CaCl<sub>2</sub>熔盐体系中直接电解固态金属氧化物制备钛铁合金化合物, 以固态Fe粉和TiO<sub>2</sub>粉混合物为阴极, 石墨棒为阳极, 刚玉坩埚电解槽, 槽电压3.4 V. 结果表明, Fe粉和TiO<sub>2</sub>粉被电解得到钛铁合金. 本文对Fe和TiO<sub>2</sub>不同配比阴极进行了研究, 发现不同铁含量的阴极产物不同, 在前7 h内随着铁元素含量的增加电解反应速度提高.

**关键词:** 材料合成与加工工艺 电化学 电脱氧 熔盐 钛铁合金 TiFe, Fe<sub>2</sub>Ti

## Preparation of solid state Fe-Ti alloy compound by FFC in molten salts at 700°C

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### Abstract:

The Ti-Fe alloy compound was prepared by FFC in the molten salts at 700°C. The preformed cathode feed was fabricated with the slurry of mixing TiO<sub>2</sub> and Fe power. The graphite rod was used as the anode in the corundum crucible. At cell voltage of 3.4 V, electro-deoxidation was carried out. With different stoichiometric ratios of Fe and TiO<sub>2</sub> powder, different currency-time plots were gotten, which showed that the more Fe addition, the quicker the reaction speed is during the first 7 hours deoxidation.

**Keywords:** synthesizing and processing technics electrochemical TiFe Fe<sub>2</sub>Ti molten salts electro-deoxidation

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