Iron Removal from Titanium Ore by Electrochemical Method

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Abstract

With the objective of establishing a new titanium production process, a novel process for the selective removal of iron from titanium ore by an electrochemical method was investigated. The thermodynamic analyses of the chlorination reactions in a Ti-Fe-O-Cl system were carried out prior to the fundamental experimental work, and the possibility of the chlorination reactions was investigated. In the experiment, low-grade titanium ore in a carbon crucible was immersed in molten calcium chloride and polarized anodically at 1100 K under an argon atmosphere in order to remove iron from the ore. At this stage, 80 mass% of iron in the low-grade titanium ore was successfully removed. This result shows that iron in the titanium ore was chlorinated and removed by the electrochemical method.