

Title (en)

Reduction of metal oxides in an electrolytic cell

Title (de)

Reduktion von Metalloxiden in einer Elektrolysezelle

Title (fr)

Réduction d'oxydes métalliques dans une cellule électrolytique

Publication

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Application

EP 14163470 A 20030313

Priority

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- EP 03743767 A 20030313

Abstract (en)

[origin: WO03076690A1] A method of reducing a metal oxide, such as titania in a solid state in an electrolytic cell is disclosed. The electrolytic cell includes an anode, a cathode, and a molten electrolyte. The electrolyte includes cations of a metal that is capable of chemically reducing the metal oxide. The metal oxide in a solid state is immersed in the electrolyte. The method includes a step of operating the cell at a potential that is above a potential at which cations of the metal that is capable of chemically reducing the metal oxide deposit as the metal on the cathode, whereby the metal chemically reduces the metal oxide.

IPC 8 full level

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Citation (search report)

- [XD] WO 9964638 A1 19991216 - UNIV CAMBRIDGE TECH [GB], et al
- [XP] WO 03002785 A1 20030109 - BHP BILLITON INNOVATION PTY [AU], et al
- [XP] WO 03016594 A1 20030227 - BHP BILLITON INNOVATION PTY [AU], et al
- [XD] CHEN G Z ET AL: "Direct electrochemical reduction of titanium dioxide to titanium in molten calcium chloride", NATURE, NATURE PUBLISHING GROUP, LONDON, GB, vol. 407, 21 September 2000 (2000-09-21), pages 361 - 364, XP002968414, ISSN: 0028-0836
- [X] SADOWAY D R ET AL: "Electrochemical deoxidation of yttrium-oxygen solid solutions", JOURNAL OF ALLOYS AND COMPOUNDS, ELSEVIER SEQUOIA, LAUSANNE, CH, vol. 237, 15 April 1996 (1996-04-15), pages 150 - 154, XP004077077, ISSN: 0925-8388
- [X] OKABE T H ET AL: "ELECTROCHEMICAL DEOXIDATION OF TITANIUM", METALLURGICAL TRANSACTIONS B. PROCESS METALLURGY, METALLURGICAL SOCIETY OF AIME. NEW YORK, US, vol. 24B, June 1993 (1993-06-01), pages 449 - 455, XP000381332

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EP 1492905 A4 20060628; EP 2770086 A2 20140827; EP 2770086 A3 20141029; JP 2005520045 A 20050707; JP 4658479 B2 20110323;
KR 101038701 B1 20110602; KR 20040111408 A 20041231; KR 20110025237 A 20110309; MX PA04008887 A 20041126;
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