

Title (en)

PROCESS AND HIGH SURFACE AREA ELECTRODES FOR THE ELECTROCHEMICAL REDUCTION OF CARBON DIOXIDE

Title (de)

VERFAHREN UND ELEKTRODEN MIT GROSSEM OBERFLÄCHENBEREICH ZUR ELEKTROCHEMISCHEN REDUKTION VON KOHLENSTOFFDIOXID

Title (fr)

PROCESSUS ET ÉLECTRODES À SURFACE ÉLEVÉE POUR RÉDUCTION ÉLECTROCHIMIQUE DE DIOXYDE DE CARBONE

Publication

EP 2895642 A4 20151021 (EN)

Application

EP 13837298 A 20130805

Priority

- US 201261701237 P 20120914
- US 201261703232 P 20120919
- US 201261703234 P 20120919
- US 201261703231 P 20120919
- US 201261703229 P 20120919
- US 201261703238 P 20120919
- US 201261703175 P 20120919
- US 201261703158 P 20120919
- US 201261703187 P 20120919
- US 201261720670 P 20121031
- US 201213724885 A 20121221
- US 2013053554 W 20130805

Abstract (en)

[origin: WO2014042782A1] Methods and systems for electrochemical conversion of carbon dioxide to organic products including formate and formic acid are provided. A method may include, but is not limited to, steps (A) to (C). Step (A) may introduce an acidic anolyte to a first compartment of an electrochemical cell. The first compartment may include an anode. Step (B) may introduce a bicarbonate-based catholyte saturated with carbon dioxide to a second compartment of the electrochemical cell. The second compartment may include a high surface area cathode including indium and having a void volume of between about 30% to 98%. At least a portion of the bicarbonate-based catholyte is recycled. Step (C) may apply an electrical potential between the anode and the cathode sufficient to reduce the carbon dioxide to at least one of a single-carbon based product or a multi-carbon based product.

IPC 8 full level

C25B 3/00 (2006.01); **C25B 3/25** (2021.01); **C25B 9/19** (2021.01)

CPC (source: EP)

C25B 1/04 (2013.01); **C25B 3/25** (2021.01); **C25B 9/19** (2021.01); **C25B 11/03** (2013.01); **C25B 11/057** (2021.01); **C25B 11/075** (2021.01); **C25B 15/08** (2013.01)

Citation (search report)

- [XP] US 2013180863 A1 20130718 - KACZUR JERRY J [US], et al
- [A] US 4589963 A 19860520 - CIPRIANO ROBERT A [US], et al
- See references of WO 2014042781A2

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

WO 2014042782 A1 20140320; AU 2013316029 A1 20150319; AU 2013316029 B2 20180329; BR 112015005640 A2 20170808; CA 2883127 A1 20140320; CA 2883127 C 20210427; CN 104619886 A 20150513; CN 104619886 B 20190212; EP 2895642 A2 20150722; EP 2895642 A4 20151021; EP 2895642 B1 20180425; JP 2015533944 A 20151126; KR 20150055033 A 20150520; WO 2014042781 A2 20140320; WO 2014042781 A3 20140508

DOCDB simple family (application)

US 2013053558 W 20130805; AU 2013316029 A 20130805; BR 112015005640 A 20130805; CA 2883127 A 20130805; CN 201380048093 A 20130805; EP 13837298 A 20130805; JP 2015531925 A 20130805; KR 20157009475 A 20130805; US 2013053554 W 20130805