

## Title (en)

IMMOBILIZED SELENIUM, A METHOD OF MAKING, AND USES OF IMMOBILIZED SELENIUM IN A RECHARGEABLE BATTERY

## Title (de)

IMMOBILISIERTES SELEN, VERFAHREN ZUR HERSTELLUNG UND VERWENDUNG VON IMMOBILISIERTEM SELEN IN EINER WIEDERAUFLADBAREN BATTERIE

## Title (fr)

SÉLÉNIUM IMMOBILISÉ, PROCÉDÉ DE FABRICATION ET UTILISATIONS DE SÉLÉNIUM IMMOBILISÉ DANS UNE BATTERIE RECHARGEABLE

## Publication

**EP 3417502 A4 20191002 (EN)**

## Application

**EP 17753807 A 20170216**

## Priority

- US 201662296286 P 20160217
- US 201662364113 P 20160719
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## Abstract (en)

[origin: WO2017143021A1] An immobilized selenium body, made from carbon and selenium and optionally sulfur, makes selenium more stable, requiring a higher temperature or an increase in kinetic energy for selenium to escape from the immobilized selenium body and enter a gas system, as compared to selenium alone. Immobilized selenium localized in a carbon skeleton can be utilized in a rechargeable battery. Immobilization of the selenium can impart compression stress on both the carbon skeleton and the selenium. Such compression stress enhances the electrical conductivity in the carbon skeleton and among the selenium particles and creates an interface for electrons to be delivered and or harvested in use of the battery. A rechargeable battery made from immobilized selenium can be charged or discharged at a faster rate over conventional batteries and can demonstrate excellent cycling stability.

## IPC 8 full level

**H01M 4/38** (2006.01); **H01M 4/13** (2010.01); **H01M 4/133** (2010.01); **H01M 4/136** (2010.01); **H01M 4/36** (2006.01); **H01M 4/62** (2006.01); **H01M 10/052** (2010.01)

## CPC (source: EP KR)

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## Citation (search report)

- [X] CN 105070892 A 20151118 - CHINESE ACAD INST CHEMISTRY & WO 2017053144 A1 20170330 - INST CHEMISTRY CAS [CN], et al & EP 3353841 A1 20180801 - INST OF CHEMISTRY CHINESE ACADEMY OF SCIENCE [CN], et al
- [X] US 2012225352 A1 20120906 - ABOUIMRANE ALI [US], et al
- [X] US 2428055 A 19470930 - VON HIPPEL ARTHUR, et al
- [XP] C. ZHAO ET AL.: "Facile synthesis of selenium/potassium tartrate derived porous carbon composite as an advanced Li-Se battery cathode - RSC Advances (RSC Publishing)", 9 May 2016 (2016-05-09), XP055581799, Retrieved from the Internet <URL:https://pubs.rsc.org/en/Content/ArticleLanding/2016/RA/c6ra07837k#|divAbstract> [retrieved on 20190416]
- See also references of WO 2017143021A1

## Designated contracting state (EPC)

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## Designated extension state (EPC)

BA ME

## DOCDB simple family (publication)

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## DOCDB simple family (application)

**US 2017018110 W 20170216**; CA 3012863 A 20170216; CA 3194423 A 20170216; EP 17753807 A 20170216; JP 2018540004 A 20170216; JP 2020146844 A 20200901; JP 2022188119 A 20221125; KR 20187026690 A 20170216; KR 20207032601 A 20170216; KR 20217029683 A 20170216; KR 20227034571 A 20170216