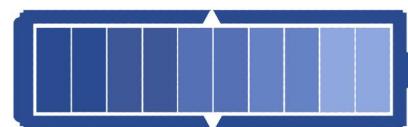


# BOLETÍN DE VIGILANCIA TECNOLÓGICA E INTELIGENCIA COMPETITIVA

## ALMACENAMIENTO DE ENERGÍA

DICIEMBRE 2019



**BATTERYPLAT**

# ÍNDICE

## NOTICIAS

1. Improvement busca la integración de microrredes con sistemas híbridos de al...	2
2. Illinois researcher's theory of pore-scale transport to enable improved flo...	2
3. New industry-research partnership boosts battery innovation in Europe	3
4. \$2 million DOE grant supports Lehigh researchers building thermal battery	3
5. Flow Batteries Struggle in 2019 as Lithium-Ion Marches On	4
6. Los materiales para baterías: mercado y economía de futuro	4
7. Post-lithium battery technology	4
8. La fábrica de Tesla en Shanghai comenzará ya la producción	5
9. Almacenaje de electricidad creando energía potencial	5
10. The battery metal no one wants to talk about	6
11. How the Battery Sector Is Looking to Improve Lithium-Ion	6
12. Battery pioneers awarded Nobel Prize	6
13. Watt It Takes: The Startup Working to Make Solar-Storage Better Than the Af...	7

## EMPRESAS Y MERCADOS

14. Ingeteam inaugura su nueva planta de Bizkaia	8
15. Valmet Automotive Launches Battery Pack Production In Finland	8
16. Daimler's electric Mercedes-Benz SUV to make U.S. debut at \$67,900	9
17. Nikola Motors Promises To Reveal Revolutionary New Battery In 2020	9
18. Could This Liquid Lithium Li-S Battery Have Automotive Applications?	10
19. AMG to built Lithium Hydroxide refining plant in Germany	10
20. Ford Mustang Lithium Electric Pony Car Revealed: 800 Volts, 900 HP	11
21. Decree annulled on Bolivian-German lithium deal	11
22. Samsung SDI: Robust Sales Growth Of xEV Batteries To Continue	11
23. Panasonic Increased Automotive Battery Sales In Q3 2019	12
24. Electrify America To Make Plug&Charge Fully Operational In 2020	13
25. We Estimate Cost Savings for Tesla's New Battery Line	13
26. Toyota Plans To Unveil Solid-State Battery Electric Car Next Year	14

# ÍNDICE

27. Nova Bus Is Introducing LFSe+ With 594 kWh Battery Pack	14
28. Volvo Introduces 7900 Electric Articulated With 396 kWh Battery Pack	15
29. New batteries and longest bus so far from Solaris	15

## PATENTES

30. Anode, and lithium secondary battery comprising anode	16
31. Cathode materials for lithium oxygen batteries.	16
32. Coin-shaped lithium secondary battery and IoT device	17
33. Lithium ion secondary battery electrode	17
34. Modified silicon-based anode material and preparation method therefor, and ...	18
35. Molten fluid electrode apparatus with solid lithium iodide electrolyte havi...	18
36. Positive electrode active material for rechargeable lithium battery, method...	19
37. Doped lithium positive electrode active material and process for manufactur...	19
38. Hybrid lithium-ion battery-capacitor (h-libc) energy storage devices	20
39. Lithium metal battery electrolyte	20
40. Method for manufacturing anodes for lithium-ion batteries	21
41. Method of diagnosing lithium-ion battery and diagnostic apparatus for lithi...	21
42. Multimode battery charging	22
43. Non-Aqueous Electrolyte Solution And Lithium Secondary Battery Including Th...	22
44. Power battery pack	23
45. Reactive sintering of ceramic lithium-ion solid electrolytes	23
46. Redox-flow battery system and method of operating redox-flow battery system	24
47. Secondary Battery	24
48. Separator for lithium secondary battery, manufacturing method therefor, and...	25
49. Solid-state electrolytes and batteries made therefrom, and methods of makin...	25
50. Stacked battery	26
51. Storage battery system	26
52. Systems and Methods for Extending Battery Life by Monitoring Device Activit...	27
53. Underwater energy storage and electricity	27
54. Wireless parallel charging	28

# ÍNDICE

55. Sealed structural pass through assemblies for electrified vehicle battery p...	28
56. Brine hybrid redox flow battery	29
57. Method for using electrochemical components for storage of energy and infor...	29
58. Range-extended electric vehicles having lithium titanate oxide (lto) batter...	30
59. Replaceable battery pack electric vehicle charging method, system, device, ...	30
60. Storage detection method, storage detection device, and smart storage devic...	31
61. Systems and methods for UAV battery exchange	32
62. Thermal energy storage facility	33
63. Vehicle heat-management system	33
64. Thermochemical energy storage method and system with high-temperature calci...	34
65. Systems And Methods For Communicating Power State Information From An Exter...	34
66. Electrolytic solution, electrochemical device, lithium-ion secondary batter...	35
67. Method of making an energy storage article	35
68. Vehicle battery case	36
69. Vehicle electrical energy storage device thermally regulated using heat pip...	36
70. Vehicular battery housing, vehicular battery pack, and electric vehicle	37
71. Thermoelectric heat pump assembly with removable battery	37
72. System and method for battery selection	38
73. Voltage measuring device for battery cell of vehicle	38
74. Vehicle battery controller based on a reduced order model	39
75. Preloaded battery module safety plugs	39
76. Vehicle programming and diagnostic device with integrated battery charger	40
77. Rechargeable battery system for a vehicle	40
78. Power source system for vehicle	41
79. Wireless charging and power storage assembly for high-power mouse	41

## PUBLICACIONES CIENTÍFICAS

80. Data on reducing carbon footprint in microgrids using distributed battery e...	42
81. Optimization of pulse current on energy storage of zinc-air flow batteries	42
82. Redox Targeting-Based Vanadium Redox-Flow Battery	43



# ÍNDICE

83. Capacity Fading of Ni-Rich NCA Cathodes: Effect of Microcracking Extent	43
84. Energy storage properties of polyimide/BaTiO <sub>3</sub> nanocomposite films and their...	44
85. Computational Screening of Current Collectors for Enabling Anode-Free Lithi...	44
86. Cu(In,Ga)(S,Se) <sub>2</sub> Photocathodes with a Grown-In Cu <sub>x</sub> S Catalyst for Solar Wate...	45
87. Overcoming the Challenges of 5 V Spinel LiNi <sub>0.5</sub> Mn <sub>1.5</sub> O <sub>4</sub> Cathodes with Solid ...	45
88. Transport in Superconcentrated LiPF <sub>6</sub> and LiBF <sub>4</sub> /Propylene Carbonate Electrol...	46
89. Unraveling the Cationic and Anionic Redox Reactions in a Conventional Layer...	46
90. Nano-compacted Li <sub>2</sub> S/Graphene Composite Cathode for High-Energy Lithium–Sulf...	47
91. Artificial Solid Electrolyte Interphase for Suppressing Surface Reactions a...	47
92. Li-CO <sub>2</sub> Batteries Promise 7 Times The Energy Density Of Lithium-Ion	48

## NOTICIAS

### Improvement busca la integración de microrredes con sistemas híbridos de almacenamiento

Publicada en <http://www.interempresas.net>, 16/12/2019.

El proyecto IMPROVEMENT, 'Integration of combined cooling, heating and power microgrids in zero-energy public buildings under high power quality and continuity of service requirements', enmarcado en el programa Interreg Sudoe, tiene como objetivo general convertir edificios públicos existentes en edificios de consumo de energía casi nulo mediante la integración de microrredes de energía renovable con generación combinada de calor, frío y electricidad, y sistemas de almacenamiento.

[ver más...](#)

### Illinois researcher's theory of pore-scale transport to enable improved flow batteries

Publicada en Eureka! technology & engineering, 21/11/2019.

(University of Illinois College of Engineering) Redox flow batteries are an emerging technology for electrochemical energy storage that could help enhance the use of power produced by renewable energy resources. In a new paper, Kyle Smith, assistant professor of mechanical science and engineering, addressed some of its challenges with a new theory to predict how fluid flow affects the ability of molecules in a flow battery to react at the surfaces of porous electrodes.



[ver más...](#)

## **New industry-research partnership boosts battery innovation in Europe**

Publicada en <https://batteryinnovation.org>, 21/11/2019.

A global battery research group has joined forces with European battery manufacturers in a move designed to boost innovation in the technology and support decarbonisation. The Consortium for Battery Innovation (CBI), a global research group developing advanced lead batteries has signed a memorandum of understanding with EUROBAT, the Brussels-based association representing Europe's automotive and industrial battery manufacturers.

[ver más...](#)

## **\$2 million DOE grant supports Lehigh researchers building thermal battery**

Publicada en [Eurekalert technology & engineering](#), 20/11/2019.

(Lehigh University) The Department of Energy's Transformative Power Generation Program has awarded a three-year, \$2 million grant to Lehigh University researchers working on thermal energy storage (TES) for applications in fossil-fired power plants. The project is affiliated with Lehigh University's Institute for Cyber Physical Infrastructure and Energy (I-CPIE) and brings together expertise from the Energy Research Center (ERC), the Advanced Technology for Large Structural Systems (ATLSS) Engineering Research Center, and industry partners.

[ver más...](#)

## Flow Batteries Struggle in 2019 as Lithium-Ion Marches On

Publicada en GreenTechMedia GTM - Energy Efficiency News, 05/11/2019.

October's SoftBank-led investment in iron flow battery startup ESS represented an unusual event in 2019: a piece of good news for the flow battery sector. The \$30 million cash injection was a rare sign that there may still be life in an energy storage technology class that had almost faded from view in recent months.

[ver más...](#)

## Los materiales para baterías: mercado y economía de futuro

Publicada en Revista Dyna - Ingeniería e Industria , 04/11/2019.

Son los involucrados con las baterías y equipos para almacenamiento químico de la energía, y dado que, al menos en un futuro a medio plazo, es la tecnología ion-Li la dominante, es en ese campo donde se ubican los materiales más demandados. Litio: Su demanda, en forma de carbonatos o hidróxidos, puede triplicarse en los próximos diez años si no hay otra tecnología disponible próximamente, comenzando por un incremento del 20% el año próximo.

[ver más...](#)

## Post-lithium battery technology

Publicada en nanowerk, 04/11/2019.

Next-generation batteries will probably see the replacement of lithium ions by more abundant and environmentally benign alkali metal or multivalent ions. A major challenge, however, is the development of stable electrodes that combine high energy densities with fast charge and discharge rates.



[ver más...](#)

## La fábrica de Tesla en Shanghai comenzará ya la producción

Publicada en Revista Dyna - Ingeniería e Indústria , 24/10/2019.

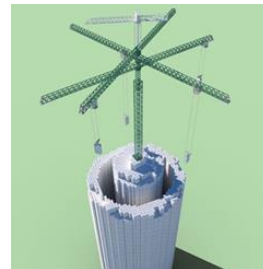
Pues lo prometido se ha convertido en realidad: diez meses después de comenzadas las excavaciones para iniciar las obras se están haciendo las primeras pruebas de producción con la idea de pasar a la fabricación propiamente dicha en pocas semanas. Se espera que este año se consiga un ritmo de 1.000 vehículos semanales, para pasar a 3.000 a comienzo de 2020.

[ver más...](#)

## Almacenaje de electricidad creando energía potencial

Publicada en Revista Dyna - Ingeniería e Indústria , 20/10/2019.

En uno de sus cuadros comparativos valoraba algunos de los métodos utilizados, siendo el de mayor rendimiento el llamado de hidro-bombeo, aprovechar energía eléctrica excedente para elevar agua al nivel superior del pantano, que se cifra en alrededor del 70%.



[ver más...](#)

## The battery metal no one wants to talk about

Publicada en Euractiv - European Union Information Website (EU and Europe), 18/10/2019.

It accounts for around 75% of all rechargeable energy storage around the world. It is in just about every car and truck, regardless of whether the vehicle has an internal-combustion engine, uses hybrid technology or is pure electric. Its proven...

[ver más...](#)

## How the Battery Sector Is Looking to Improve Lithium-Ion

Publicada en GreenTechMedia GTM - Energy Efficiency News, 17/10/2019.

Electric vehicle makers and battery manufacturers are making progress in developing new lithium-ion designs, amid persistent concerns over the supply of key materials. Concerns over cobalt, in particular, are forcing battery makers to move toward cobalt-light lithium-ion formulations, said Hans Eric Melin, founder of Circular Energy Storage, a consultancy focused on battery end-of-life management.

[ver más...](#)

## Battery pioneers awarded Nobel Prize

Publicada en Euractiv - European Union Information Website (EU and Europe), 09/10/2019.

Three scientists have won the 2019 Nobel Prize for Chemistry for putting power in peoples' pockets by developing rechargeable lithium-ion batteries which made the global information technology, mobile and fossil-fuel free revolutions possible.



[ver más...](#)

## **Watt It Takes: The Startup Working to Make Solar-Storage Better Than the African Grid**

Publicada en GreenTechMedia GTM - Energy Efficiency News, 02/10/2019.

This week on Watt It Takes: how a computer nerd who loved assembling electronics became obsessed with designing a solar-storage system to light up Africa. In this episode, Powerhouse CEO Emily Kirsch sits down with Xavier Helgesen, the co-founder and chief technology officer at Zola Electric. Zola is a provider of solar and storage systems in Africa. Since its founding in 2012, the company has served over a million people with clean power in five countries.

[ver más...](#)

## EMPRESAS Y MERCADOS

### Ingeteam inaugura su nueva planta de Bizkaia

Publicada en <https://www.energias-renovables.com>, 16/12/2019.

Ingeteam inauguró la pasada semana una planta para la fabricación de equipos de electrónica de potencia y control en la localidad vizcaína de Ortuella. En estas instalaciones se fabrican convertidores de potencia destinados a aplicaciones en los sectores de tracción ferroviaria, minería, naval, siderurgia, plantas de generación, redes eléctricas y almacenamiento de energía.



[ver más...](#)

### Valmet Automotive Launches Battery Pack Production In Finland

Publicada en Inside EVS, 26/11/2019.

Valmet Automotive is now producing lithium-ion battery packs for automotive OEMs. Valmet Automotive, as promised, has started large-scale production of automotive lithium-ion battery packs in Salo/Finland, in a former Nokia plant. We know that the company has selected CATL as a lithium-ion battery cell partner, but there is no info about who is are the customers and no info about the volume.



[ver más...](#)

## **Daimler's electric Mercedes-Benz SUV to make U.S. debut at \$67,900**

Publicada en Reuters Technology News, 20/11/2019.

Daimler will begin selling its electric Mercedes-Benz EQC in the United States early next year at a starting price of \$67,900, the German carmaker said on Wednesday. Daimler's electric sports utility vehicle will face competition from Tesla Inc's Model Y SUV, which starts at a price of \$39,000 and will be available in 2021. Daimler in September reiterated its plan to have up to 10 electrified car variants by 2022, and Chief Executive Officer Dieter Zetsche said he hoped the EQC and other electric cars would account for 15% to 25% of its sales by 2025.

[ver más...](#)

## **Nikola Motors Promises To Reveal Revolutionary New Battery In 2020**

Publicada en Inside EVS, 19/11/2019.

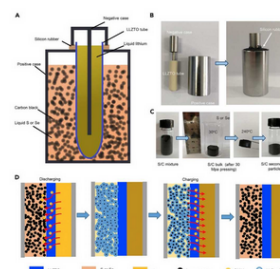
It would have 500 Wh/kg. Nikola wants to share them with other OEMs. It would have 500 Wh/kg. Nikola wants to share them with other OEMs. We tend to cultivate skepticism as a healthy tool not to create false expectations nor to make fools of ourselves when reporting anything. At the same time, we love to share good news and to talk about technology breakthroughs. But we are still undecided on how to classify Nikola Motors' latest announcement. The electric truck company claims it will reveal a revolutionary battery that has 500 Wh/kg.

[ver más...](#)

## Could This Liquid Lithium Li-S Battery Have Automotive Applications?

Publicada en Inside EVS, 19/11/2019.

It has an energy density of 500 Wh/kg. We have covered lithium-sulfur (Li-S) batteries quite often here at InsideEVs, but never one like this. These batteries use solid lithium as anodes and liquid organic electrolytes, but what if the electrolyte was solid and the lithium was liquid? That is what researchers from the Zhengzhou University, Tsinghua University, and Stanford University have proposed.



[ver más...](#)

## AMG to built Lithium Hydroxide refining plant in Germany

Publicada en Electrive, 14/11/2019.

The Dutch Advanced Metallurgical Group (AMG) is planning to build a lithium hydroxide refinery in the German town of Zeitz, Saxony-Anhalt. The metal to be processed there is to be used to produce electric car batteries. AMG's German subsidiary AMG Lithium GmbH, Frankfurt, is the one that has commenced basic engineering for a "battery-grade" lithium [...] The post AMG to built Lithium Hydroxide refining plant in Germany appeared first on electrive.com.

[ver más...](#)

## Ford Mustang Lithium Electric Pony Car Revealed: 800 Volts, 900 HP

Publicada en Inside EVS, 05/11/2019.

Webasto put an 800V battery system in it and Getrag a 6-speed manual gearbox. Why would an EV need a manual gearbox? Ever? Well, perhaps because it can be loads of fun to use on the track. Or to just shift gears on a calm road trip with the family.

[ver más...](#)

## Decree annulled on Bolivian-German lithium deal

Publicada en Electrive, 04/11/2019.

In the Potosi region of Bolivia, the deal between privately owned German company ACI Systems and the state-owned Bolivian company Yacimientos de Litio Bolivianos (YLB ) has been annulled by the cabinet of ministers of President Evo Morales. Although the government has not stated reasons for the withdrawal, in the weeks leading up to the [...] The post Decree annulled on Bolivian-German lithium deal appeared first on electrive.com.

[ver más...](#)

## Samsung SDI: Robust Sales Growth Of xEV Batteries To Continue

Publicada en Inside EVS, 31/10/2019.

Samsung SDI gradually improves sales and is confident in near-term growth. Samsung SDI gradually improves sales and is confident in near-term growth.

Samsung SDI, one of the world's leading battery manufacturers, notes a noticeable growth in "large-sized" lithium-ion cells for xEVs electric vehicles (BEVs, PHEVs, HEVs) during the third quarter of 2019. The overall Q3 financial results show just small improvements year-over-year - by 1.5% in the case of batteries, but that's only because the "small-sized" category suffers weak demand.



[ver más...](#)

## Panasonic Increased Automotive Battery Sales In Q3 2019

Publicada en Inside EVS, 31/10/2019.

Despite all headwinds, Panasonic is increasing automotive battery production, sales and profits. Despite all headwinds, Panasonic is increasing automotive battery production, sales and profits. Panasonic delivered modest financial results for the third quarter of 2019 as both sales and profits are decreasing year-over-year.

[ver más...](#)

## Electrify America To Make Plug&Charge Fully Operational In 2020

Publicada en Inside EVS, 29/10/2019.

With Plug&Charge, the car itself will become a kind of access card for the charging networks. Electrify America re-confirmed its intention to offer "Plug&Charge" technology in partnership with Hubject, to streamline the charging process through automation of authentication and billing. When the new system will be fully operational in 2020, drivers should be able to simply park at the Electrify America charging station, plug-in and charging will begin.

[ver más...](#)

## We Estimate Cost Savings for Tesla's New Battery Line

Publicada en Inside EVS, 28/10/2019.

If Tesla goes this new route, how much money could the Silicon Valley automaker save? If Tesla goes this new route, how much money could the Silicon Valley automaker save? Tesla hasn't come right out and said they are going to make their own line of batteries but at this point based on their acquisition of Maxwell and Hibar it seems to be a given. Maxwell is known for its high-speed dry electrode manufacturing process and Hibar makes battery line manufacturing equipment.

[ver más...](#)

## Toyota Plans To Unveil Solid-State Battery Electric Car Next Year

Publicada en Inside EVS, 22/10/2019.

Rather than revealing its upcoming solid-state battery-powered car at a major auto show, Toyota aims to take the cover off at the upcoming 2020 Summer Olympics in Tokyo, Japan, which runs from Friday, July 24, 2020 – Sunday, August 9, 2020. This information was recently provided to Autocar ahead of the Tokyo Motor Show by Toyota's Technology Chief Shigeki Terashi. He shared:



[ver más...](#)

## Nova Bus Is Introducing LFSe+ With 594 kWh Battery Pack

Publicada en Inside EVS, 22/10/2019.

The huge 594 kWh battery option is good enough for 211-292 miles (340-470 km) of range. Canadian bus manufacturer Nova Bus (related to Volvo Buses) officially introduced at the American Public Transportation Association's TRANSform Conference in New York City, a new all-electric model, the LFSe+. This new model surprises us with quite a big battery pack of 594 kWh, which is expected to translate into a range of 211-292 miles (340-470 km) on a single charge.

[ver más...](#)

## Volvo Introduces 7900 Electric Articulated With 396 kWh Battery Pack

Publicada en Inside EVS, 21/10/2019.

Volvo Buses expanded its electric bus lineup with the 7900 Electric Articulated model (announced earlier this year), introduced at the 2019 Busworld show in Brussels (October 18–23). It's available in 18 or 18.7 m length, with passenger capacity of up to 150. There is no info about the range, but with up to 396 kWh battery pack, it should be enough to replace its diesel counterpart, especially since there are fast charging options (OppCharge and Combo2/CCS).

[ver más...](#)

## New batteries and longest bus so far from Solaris

Publicada en Electrive, 19/10/2019.

Solaris has just presented a battery update for its Urbino 18 electric bus at Busworld. At the bus trade show in Belgium, the Polish manufacturer is also exhibiting its longest vehicle to date, the new Trollino 24 trolleybus. The new "Solaris High Energy +" batteries are characterized by a high energy density. The bus manufacturer [...] The post New batteries and longest bus so far from Solaris appeared first on electrive.com.

[ver más...](#)

## PATENTES

### Anode, and lithium secondary battery comprising anode

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 20/11/2019.

Solicitantes: LG CHEM, LTD.[KR]

The present invention provides an anode and a secondary battery comprising same. The anode comprises a current collector and an anode active material layer disposed on the current collector, wherein the anode active material layer comprises: an anode active material comprising  $\text{SiO}_x$  ( $0 < x < 2$ ) particles; a conductive material; and a binder, and wherein the anode active material layer comprises: a lower layer in contact with the current collector; an upper layer located on the lower layer; and an intermediate layer located between the lower layer and the upper layer, wherein the total content of the conductive material and the binder in the upper layer is greater than the total content of the conductive material and the binder in the intermediate layer, and the total content of the conductive material and the binder in the lower layer is greater than the total content of the conductive material and the binder in the intermediate layer.

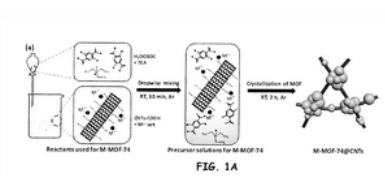
[ver más...](#)

### Cathode materials for lithium oxygen batteries.

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 20/11/2019.

Solicitantes: WASHINGTON STATE UNIVERSITY

The embodiments herein provide for an oxygen/air cathode that includes metal-organic frameworks and/or hybrids of metal-organic frameworks and carbon networks. The metal-organic-framework-based Li-O<sub>2</sub> cells are operated in humid O<sub>2</sub> where water plays a critical role in improving battery performance. Such embodiments not only improve battery performance but also reduces the cost by cycling the Li-O<sub>2</sub> batteries in humid oxygen with MOF@CNT hybrid catalysts.



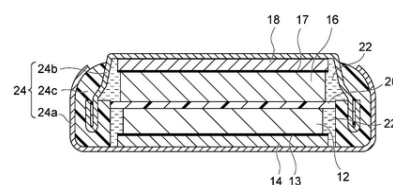
[ver más...](#)

## Coin-shaped lithium secondary battery and IoT device

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 20/11/2019.

Solicitantes: NGK INSULATORS, LTD.

Provided is a coin-shaped lithium secondary battery that: has excellent thermal resistance such that reflow soldering can be used; is small; has high capacity and high output; and can be constant-voltage charged. This coin-shaped lithium secondary battery comprises: a positive electrode plate being a lithium complex oxide sintered plate; a negative electrode plate being a titanium-containing sintered plate; a separator interposed between the positive electrode plate and the negative electrode plate; an electrolyte impregnated in the positive electrode plate, the negative electrode plate, and the separator; and an outer body comprising a sealed space and housing the positive electrode plate, the negative electrode plate, the separator, and the electrolyte, inside the sealed space.



[ver más...](#)

## Lithium ion secondary battery electrode

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 20/11/2019.

Solicitantes: HONDA MOTOR CO., LTD.

A lithium ion secondary battery electrode which can obtain excellent charge/discharge cycle characteristics when used in a lithium ion secondary battery is provided. This lithium ion secondary battery electrode includes a current collector formed from a porous metal body having a three-dimensional reticular structure comprising three-dimensionally linked columnar frames, a first active material held on one surface of the current collector, and a second active material held on the other surface of the current collector.

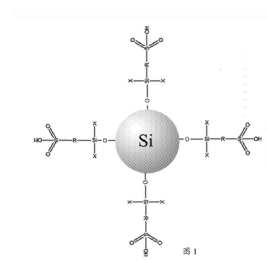
[ver más...](#)

## Modified silicon-based anode material and preparation method therefor, and lithium-ion battery

Publicada en Tecnologías asociadas a baterías, supercondensadores, acumuladores, 20/11/2019.

Solicitante: HUAWEI TECHNOLOGIES CO., LTD.

Embodiments of the present invention provide a modified silicon-based anode material, comprising a silicon-based anode material and a modified layer provided on the surface of the silicon-based anode material. The modified layer comprises a silane coupling agent containing a sulfonyl group. The silane coupling agent containing a sulfonyl group comprises a silicon atom and a non-hydrolyzable group and a hydrolyzable group which are bonded to the silicon atom.



[ver más...](#)

## Molten fluid electrode apparatus with solid lithium iodide electrolyte having improved lithium ion transport characteristics

Publicada en Tecnologías asociadas a baterías, supercondensadores, acumuladores, 20/11/2019.

Solicitantes: VISSERS BATTERY CORPORATION

Performance of a thermal lithium battery is improved by improving the ion-transport characteristics of a solid lithium iodide electrolyte. The lithium iodide lattice of the solid electrolyte includes defects that improve the ion-transport characteristics of the solid lithium iodide electrolyte, in one example, the defects are due to the introduction of nanoparticles that result in grain boundary defects. The defects resulting at the grain boundaries with the nanoparticles improve the ion transport characteristics of the electrolyte. In another example, defects originating from the synthesis process are pinned by the presence of nanoparticles and/or the reinforcing structure. In another example, the defects are aliovalent substitution defects.

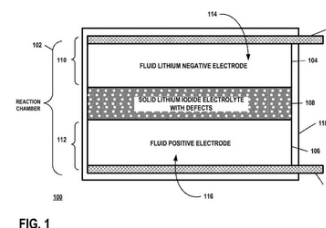


FIG. 1

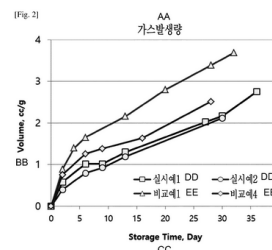
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## Positive electrode active material for rechargeable lithium battery, method for preparing same, and rechargeable lithium battery including same

Publicada en Tecnologías asociadas a baterías, supercondensadores, supercondensadores, acumuladores, 20/11/2019.

Solicitantes: SAMSUNG SDI CO., LTD.

Provided are a positive electrode active material for a rechargeable lithium battery, a method for preparing same, and a rechargeable lithium battery including same, wherein the positive electrode active material comprises: a lithium metal compound; and a conductive surface layer present on the surface of the lithium metal compound and containing a phosphate salt and a metal salt of an acid, which is a relative strong acid compared with phosphoric acid.



[ver más...](#)

## Doped lithium positive electrode active material and process for manufacture thereof

Publicada en Tecnologías asociadas a baterías, supercondensadores, supercondensadores, acumuladores, 13/11/2019.

Solicitantes: HALDOR TOPSØE A/S

A lithium positive electrode active material including at least 95 wt % spinel having a chemical composition of  $\text{Li}_x\text{Ni}_y\text{Mn}_{2-y-z}\text{D}_1\text{D}_2\text{Z}_2\text{O}_4$ , wherein  $0.9 \leq x \leq 1.1$ ,  $0.4 \leq y \leq 0.5$ ,  $0.005 \leq z \leq 0.2$ ,  $0 \leq z \leq 0.2$ , wherein D1 and D2 are dopants chosen between the following elements: Co, Cu, Ti, Zn, Mg, Fe or combinations thereof. D1 and D2 are different dopants, and the lithium positive electrode active material is a powder composed of material particles, wherein the distribution of dopant D1 is non-uniform along a radial axis of the material particles and the distribution of the dopant D2 is substantially uniform along the radial axis of the material particles. Also, a process for preparing the lithium positive electrode active material and a secondary battery comprising the lithium positive electrode active material.

[ver más...](#)

## Hybrid lithium-ion battery-capacitor (h-libc) energy storage devices

Publicada en Tecnologías asociadas a baterías, supercondensadores, supercondensadores, acumuladores, 13/11/2019.

Solicitantes: FLORIDA STATE UNIVERSITY RESEARCH FOUNDATION, INC.; GENERAL CAPACITOR, LLC

A hybrid lithium-ion battery-capacitor (H-LIBC) energy storage device includes a hybrid composite cathode electrode having a lithium ion battery (LIB) cathode active material and a lithium ion capacitor (LIC) cathode active material. An anode electrode having a surface is pre-loaded and pressed with a lithium (Li) thin film source. The anode electrode is pre-lithiated with the lithium film source by positioning the Li film source on the surface of anode electrode after electrolyte filling and soaking processes, a separator and an organic solvent electrolytic solution including a lithium salt electrolyte are also provided. A method of making a hybrid lithium-ion battery-capacitor and a method of making a hybrid composite cathode for a hybrid lithium-ion battery-capacitor are also disclosed.

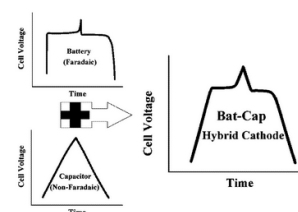


FIG. 1

[ver más...](#)

## Lithium metal battery electrolyte

Publicada en Tecnologías asociadas a baterías, supercondensadores, supercondensadores, acumuladores, 13/11/2019.

Solicitantes: TSINGHUA UNIVERSITY

Provided is a lithium metal battery electrolyte, containing an organic solvent, a lithium salt and an additive, wherein the organic solvent is an ester, ether, or ether-ester blend, the lithium salt dissolves in the organic solvent, and the additive is composed of lithium nitrate and a metal halide. The use of the electrolyte containing the additive in a lithium metal battery can form a stable ion-electron mixed interface layer on a surface of a lithium negative electrode, which prevents, to the maximum degree, the electrolyte from coming into direct contact with a metal lithium, reduces the growth of lithium dendritic crystals and the irreversible loss of a lithium source, and achieves the quick migration on the interface layer and the uniform deposition on an electrode of lithium ions; and the electrolyte containing the additive can significantly improve the coulomb efficiency of the metal lithium and the service life of a total battery, and has a bright application prospect.

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## Method for manufacturing anodes for lithium-ion batteries

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 13/11/2019.

Solicitantes: I-TEN

The invention relates to an anode for a lithium-ion battery, including at least one anode material and being binder-free, said anode being precharged with lithium ions, characterised in that said anode material, deposited on an electronic conductor substrate capable of serving as anode current collector, is coated with a protective coating in contact with said anode material, said protective coating being capable of protecting said anode material from the atmosphere of the environment. The anode can be deposited from a vapour phase or by electrophoresis, and the protective coating by ALD or chemically in solution.

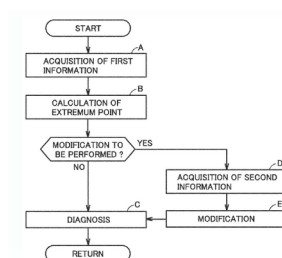
[ver más...](#)

## Method of diagnosing lithium-ion battery and diagnostic apparatus for lithium-ion battery

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 13/11/2019.

Solicitantes: TOYOTA JIDOSHA KK

A first information is acquired, which contains a charge capacity of a lithium-ion battery in association with an index value. The first information is used to obtain a function  $f(x)$ .  $f(x)$  represents the index value as a function of the charge capacity. An extremum point of a second derivative ( $f''(x)$ ) of  $f(x)$  is calculated, in which the extremum point is a minimum point of  $f(x)$ . The lithium-ion battery is diagnosed by using the charge capacity at the extremum point ( $x_e$ ). The lithium-ion battery includes a negative electrode containing at least silicon oxide and graphite. The index value is measurable from outside the lithium-ion battery. The index value is reflective of a volume of the silicon oxide and a volume of the graphite.



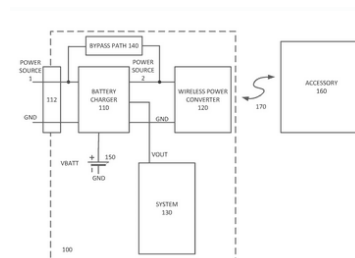
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## Multimode battery charging

Publicada en Tecnologías asociadas a baterías, supercapacitores, supercondensadores, acumuladores, 13/11/2019.

Solicitantes: APPLE INC.

An electronic device may receive or provide power using bidirectional wired and wireless power converters. A bypass path may be included to bypass the battery charger and to allow direct power transfers from a connector of the electronic device to the wireless power converter or from the wireless power converter to the connector of the electronic device. Current limiting and regulation circuitry may also be included.



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## Non-Aqueous Electrolyte Solution And Lithium Secondary Battery Including The Same

Publicada en Tecnologías asociadas a baterías, supercapacitores, supercondensadores, acumuladores, 13/11/2019.

Solicitantes: LG Chem, Ltd.

The present invention relates to a non-aqueous electrolyte solution for a lithium secondary battery, which includes a compound capable of suppressing an electrolyte solution side reaction in a high-temperature and high-voltage environment, and a lithium secondary battery in which cycle characteristics and stability are improved even during high-temperature and high-voltage charging by including the same.

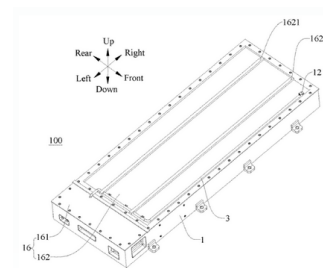
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## Power battery pack

Publicada en Tecnologías asociadas a baterías, supercapacitores, supercondensadores, acumuladores, 13/11/2019.

Solicitantes: BYD COMPANY LIMITED

The present disclosure provides a power battery pack, including: a battery pack case, at least one battery module, and a return pipe. An oil inlet and an oil outlet are formed on the battery pack case, and insulation oil is charged from the oil inlet into the battery pack case. Each of the at least one battery module is disposed in the battery pack case, and each battery module includes a module case and at least one unit cell disposed in the module case. The unit cell is immersed in the insulation oil, and the bottom of the module case is provided with a through hole and the top of the module case is provided with at least one exhaust vent. The return pipe is disposed outside the battery pack case, and the return pipe is connected between the oil outlet and the oil inlet.



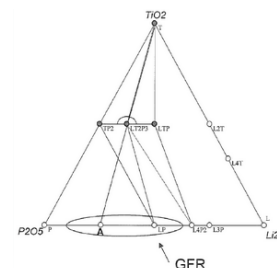
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## Reactive sintering of ceramic lithium-ion solid electrolytes

Publicada en Tecnologías asociadas a baterías, supercapacitores, supercondensadores, acumuladores, 13/11/2019.

Solicitante: CORNING INCORPORATED

A method of forming a solid, dense, hermetic lithium-ion electrolyte membrane comprises combining an amorphous, glassy, or low melting temperature solid reactant with a refractory oxide reactant to form a mixture, casting the mixture to form a green body, and sintering the green body to form a solid membrane. The resulting electrolyte membranes can be incorporated into lithium-ion batteries.



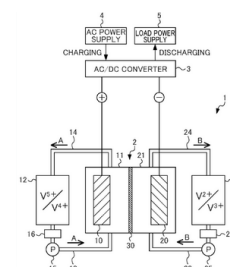
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## Redox-flow battery system and method of operating redox-flow battery system

Publicada en Tecnologías asociadas a baterías, supercapacitores, supercondensadores, acumuladores, 13/11/2019.

Solicitante: SHOWA DENKO K.K.

Provided is a redox-flow battery system, etc., for which even when using a high concentration vanadium electrolyte, it is possible to stably obtain high energy density and battery capacity based on that concentration.



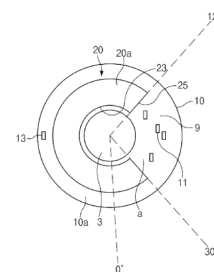
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## Secondary Battery

Publicada en Tecnologías asociadas a baterías, supercapacitores, supercondensadores, acumuladores, 13/11/2019.

Solicitantes: LG Chem, Ltd.

The present invention relates to a secondary battery provided with a multi-tab. The secondary battery includes a jelly-roll in which an electrode and a separator are stacked to cross each other and which is wound around a central core, a plurality of multi-tab parts extending from the electrode and formed on a predetermined area at an end of the jelly-roll, a can member accommodating the jelly-roll, and an insulation member disposed adjacent to the end to insulate the can member from the jelly-roll. The insulation member includes a central hole punched in a center of the insulation member so that the central core passes therethrough and a tab hole punched around the central hole to correspond to the plurality of multi-tab parts so that the plurality of multi-tab parts pass therethrough.



[ver más...](#)

## Separator for lithium secondary battery, manufacturing method therefor, and lithium secondary battery including same

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 13/11/2019.

Solicitantes: SAMSUNG SDI CO., LTD.

Disclosed are a separator for a lithium secondary battery, a method for manufacturing a separator for a lithium secondary battery, and a lithium secondary battery including same, the separator comprising: a porous substrate; a heat resistant layer positioned on at least one surface of the porous substrate and including inorganic particles; and a first adhesive layer positioned on the heat resistant layer and including a first organic polymer, wherein the heat resistant layer includes the inorganic particles of 90 wt% to 99 wt% on the basis of total weight, the thickness of the heat resistant layer is 3.5 m to 7 m, and the thickness of the first adhesive layer is 0.5 m to 3.0 m.

[ver más...](#)

## Solid-state electrolytes and batteries made therefrom, and methods of making solid-state electrolytes

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 13/11/2019.

Solicitante: Purdue Research Foundation

Method of making solid-state electrolyte with composition formula  $\text{Li}_{7-x}\text{La}_3\text{Zr}_2\text{-xBi}_x\text{O}_{12}$ . The method includes making a polymerized complex of the metal-ions of the composition formula, and making an agglomerate therefrom to be calcined and sintered to produce the solid-state electrolyte. A solid-state electrolyte with the composition formula  $\text{Li}_{7-x}\text{La}_3\text{Zr}_2\text{-xBi}_x\text{O}_{12}$  with superior ionic conductivity by choice of the value of x and processing conditions. A battery employing a solid-state electrolyte of superior ionic conductivity with the composition formula  $\text{Li}_{7-x}\text{La}_3\text{Zr}_2\text{-xBi}_x\text{O}_{12}$ .

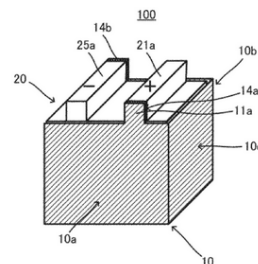
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## Stacked battery

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 13/11/2019.

Solicitante: TOYOTA JIDOSHA KK

To suppress heat generation in a short-circuit current shunt part in a stacked battery that includes the short-circuit current shunt part, in the stacked battery 100 including at least one short-circuit current shunt part 10, and a stack 20 that includes a plurality of electric elements 20a, 20b which are stacked, the short-circuit current shunt part 10 includes a first part 10a that is provided on one end side in a stacking direction of the stack 20, a second part 10b that is provided on another end side therein, and a third part 10c that connects the first part 10a and the second part 10b



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## Storage battery system

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 13/11/2019.

Solicitantes: HONDA MOTOR CO., LTD.

The purpose of the present invention is to provide a storage battery system in which an electricity storage unit or an electricity storage unit group having a low degree of progression of deterioration can be secured while providing ancillary services. The storage battery system 1 is provided with: a PLC (charging/discharging control device) 20 capable of controlling charging/discharging of each of a plurality of IPUs (electricity storage units) 50 in accordance with the supply and demand state of a power system 2; and a system control device (management device) 30 for adjusting the progression of deterioration of each of the IPUs 50 by differentiating the charging/discharging amount of each of the IPUs 50 and managing by differentiating the IPUs 50 having a low degree of progression of deterioration from the IPUs 50 having a high degree of progression of deterioration.

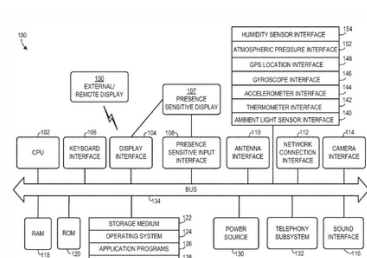
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## Systems and Methods for Extending Battery Life by Monitoring Device Activity

Publicada en Tecnologías asociadas a baterías, supercapacitores, supercondensadores, acumuladores, 13/11/2019.

Solicitantes: Google LLC

The disclosed technology includes techniques for preserving battery life of a mobile device by monitoring a mobile device to determine a state of inactivity. A state of inactivity may be determined if the screen of the mobile device is off and the mobile device remains stationary for a period of time. Battery life may be preserved by placing the mobile device and/or a mobile application of the mobile device into an idle state for successive idle periods separated by maintenance periods. When in an idle state, the mobile device and/or a mobile application of the mobile device may be prevented from utilizing various features or functions of the mobile device that may tend to drain the battery. The mobile device and/or mobile application may be granted temporary access to the various features and functions during the maintenance periods to temporarily allow the mobile device and/or mobile application to perform updates



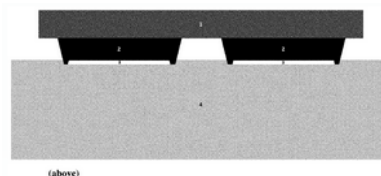
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## Underwater energy storage and electricity

Publicada en Tecnologías asociadas a almacenamiento de energía, 13/11/2019.

Solicitante: Ethan J. Novek

The present invention relates to systems and methods for pumping or removing a fluid from a region within or on top of or in contact with a water or liquid body and applications for said systems and methods. Some embodiments may be applicable to, for example, inhibiting or preventing growth formation or fouling of structures in liquid environments. Other embodiments may be applicable to, for example, an energy storage device or a tidal power energy generation system.



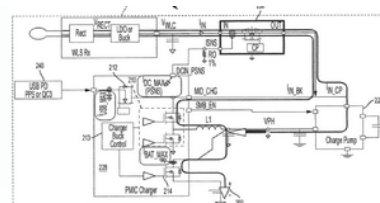
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## Wireless parallel charging

Publicada en Tecnologías asociadas a baterías, supercapacitores, supercondensadores, acumuladores, 13/11/2019.

Solicitantes: QUALCOMM Incorporated

A battery charging circuit includes a buck converter, a charge pump power converter, a sensor external to or internal to the battery charging circuit, and a control unit. The charge pump power converter includes an output coupled to an output of the buck converter for charging a battery. The sensor is configured to sense a total input current. The control unit receives the total input current that is sensed and compensates for a variation in an input current to the charge pump power converter based on whether the total input current meets a specified current variance.



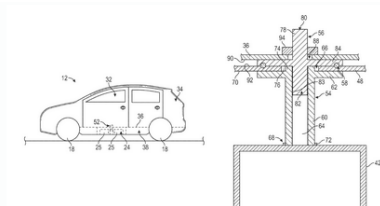
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## Sealed structural pass through assemblies for electrified vehicle battery packs

Publicada en Tecnologías asociadas a baterías, supercapacitores, supercondensadores, acumuladores, 11/11/2019.

Solicitantes: FORD GLOBAL TECHNOLOGIES, LLC

This disclosure details electrified vehicles that are equipped with pass through assemblies for structurally reinforcing and sealing battery packs. An exemplary pass through assembly includes clean-side component and a dirty-side component. The clean-side component is positioned primarily inside the battery pack, and the dirty-side component engages the clean-side component and extends to a location outside of the battery pack for interfacing with a component of the vehicle underbody. A seal of the pass through assembly is positioned between the clean-side component and the dirty-side component and is configured to block the ingress of water, dirt, and other potential contaminants.



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## Brine hybrid redox flow battery

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/11/2019.

Solicitantes: FRIEDRICH-SCHILLER-UNIVERSITÄT JENA

The invention addresses the problem of providing a hybrid redox flow battery which, in the case of storage caverns having brine-based electrolyte, allows reductions in cost and complexity with respect to the components used, particularly with respect to the redox-active substances, and additionally has improved resistance to external influences such as oxygen.

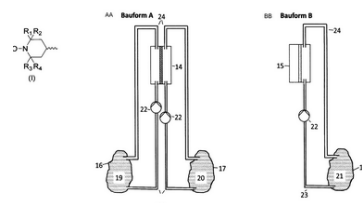


Fig. 2: Schematischer Aufbau der Kavernen-Hybrid-Flow-Batterie

AA: Design A  
BB: Design B  
CC: Schematic structure of the cavern hybrid flow battery

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## Method for using electrochemical components for storage of energy and information and associated electronic circuit

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/11/2019.

A solution for using elementary electrochemical components, manufactured from the same arrangement of materials and incorporated in a single electronic circuit, for information storage or for energy storage, is presented. Electrochemical components incorporating a first electrode, a second electrode and an active area between the two, can, by the application of different voltages for switching from a highly resistive state to a weakly resistive state or for switching from a state having one given electromotive force to a state having another electromotive force, be used respectively as a memory or as a battery.

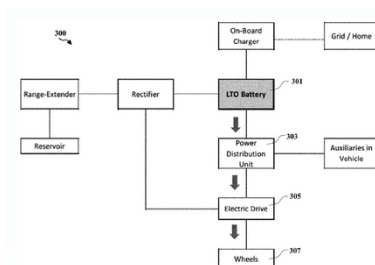
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## Range-extended electric vehicles having lithium titanate oxide (lto) battery with super high charge and discharge rates

Publicada en Tecnologías asociadas a baterías para transporte, 06/11/2019.

Solicitantes: Hybrid Kinetic Motors Corporation

An electric vehicle includes an electric drive component; a lithium titanate oxide battery pack comprising LTO battery cells; and a range extender. The range extender has a first state to deliver power to the electric drive component, a second state to charge the LTO battery pack, a third state to deliver power to the electric drive component and charge the LTO battery pack, and a fourth state in which it does not deliver power outward. The electric drive component has a first state to receive power delivered from the LTO battery pack, a second state to receive power delivered from the range extender, a third state to receive power delivered from the LTO battery pack and the range extender, a fourth state to recover braking energy to charge the LTO battery pack, and a fifth state in which it does not receive power and does not recover the braking energy.



[ver más...](#)

## Replaceable battery pack electric vehicle charging method, system, device, and storage medium

Publicada en Tecnologías asociadas a baterías para transporte, 06/11/2019.

Solicitantes: AIWAYS AUTOMOBILE (SHANGHAI) CO., LTD.

Provided are a replaceable battery pack electric vehicle charging method, system, device, and storage medium, said electric vehicle charging method comprising the following steps: parking an electric car in a parking space in a parking lot; a mobile terminal sending, to a server, charging request information including location information of the parking space and required power information; the server selecting, in the parking lot, a mobile battery pack which requires power information in the charging request information; the server sending the location information of the selected mobile battery pack to a mobile charging vehicle in the parking lot which is not being charged; the mobile charging vehicle travels to the mobile battery pack and detachably connects to the mobile battery pack, and the second battery in the mobile battery pack is electrically connected to a charging gun of the mobile charging vehicle; the mobile charging vehicle hauls the mobile battery pack to travel to the parking space and performs charging. The described charging method can be used in a parking lot that does not have charging piles, and provides a solution for convenient power charging for electric vehicles.

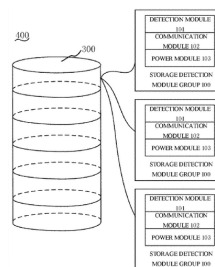
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## Storage detection method, storage detection device, and smart storage device

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/11/2019.

Solicitantes: Yungu (Gu'an) Technology Co., Ltd.

The present disclosure relates to a storage detection module group for assisting a storage device to realize smart storage. The storage device includes at least one storage unit, and the storage detection module group includes: at least one detection module mounted on at least one storage unit of the storage device and configured to detect the storage state of at least one storage unit; a communication module configured to send a request for updating storage information of an article to the server, in order to allow the server to obtain a updated storage information of an article according to the request for updating storage information of an article, when the detection module detects that the storage state of at least one storage unit is changed; a power module configured to supply an operating voltage for the detection module and the communication module.



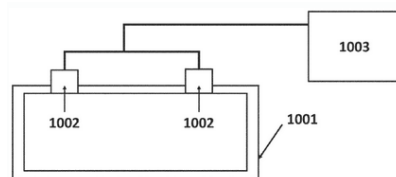
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## Systems and methods for UAV battery exchange

Publicada en Tecnologías asociadas a baterías para transporte, 06/11/2019.

Solicitantes: SZ DJI TECHNOLOGY CO., LTD.

A unmanned aerial vehicle (UAV) battery changing station includes a UAV landing area configured to support a UAV coupled to a first battery when the UAV is resting on the battery changing station, a movable battery storage unit including a holding station configured to store a second battery, and a battery replacement member configured to retrieve the second battery from the holding station and couple the second battery to the UAV. The movable battery storage unit is configured to permit the holding station to rotate about an axis of rotation.



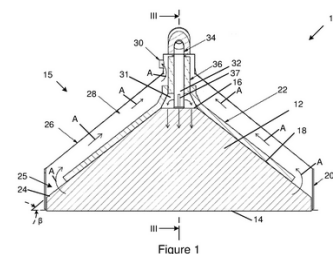
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## Thermal energy storage facility

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/11/2019.

Solicitantes: STELLENBOSCH UNIVERSITY

There is provided a thermal energy storage facility comprising a packed bed formed by a pile of elements. The packed bed includes sides that slope from a top of the pile to a bottom of the pile at their natural angle of repose. A duct is provided and has a heat exchange end in fluid communication with the packed bed at a heat exchange zone and an opposite fluid supply end. The duct enables a working fluid at elevated temperature to be introduced into the packed bed during a charge cycle. The duct further enables the working fluid to be conveyed through a charged packed bed during a discharge cycle. A barrier extends across at least a major portion of the sloping sides of the packed bed to inhibit the movement of the working fluid therethrough.



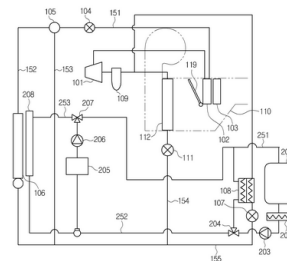
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## Vehicle heat-management system

Publicada en Tecnologías asociadas a baterías para transporte, 06/11/2019.

Solicitantes: HANON SYSTEMS

Disclosed is a vehicle heat pump system, which has an improved cooling water line structure to reduce the number of valves and thus can obtain effects, such as weight reduction, cost reduction, and package reduction, resulting from the reduction of the number of components. A vehicle heat-management system comprises a refrigerant circulation loop for conditioning vehicle interior air by exchanging heat between a refrigerant and air in an air-conditioning case through the circulation of the refrigerant, the system comprising: a first refrigerant loop for cooling electric equipment of a vehicle; and a second refrigerant loop for cooling a battery of the vehicle, wherein the first refrigerant loop and the second refrigerant loop are independently configured, and a refrigerant flowing through the first refrigerant loop selectively circulates through the second refrigerant loop.



[ver más...](#)

## Thermochemical energy storage method and system with high-temperature calcium circulation

Publicada en Tecnologías asociadas a almacenamiento de energía, 05/11/2019.

Disclosed are a thermochemical energy storage method and system with high-temperature calcium circulation, wherein  $\text{CaCO}_3/\text{CaO}$  is used as a thermochemical energy storage system, and energy is stored by means of mutual conversion between thermal energy and chemical energy. When solar radiation is sufficient, solid  $\text{CaCO}_3$  particles undergo an endothermic decomposition reaction via divided wall heating resulting from hot air generated by solar energy, so that the received heat is stored as chemical energy in decomposition products, i.e.  $\text{CaO}$  and  $\text{CO}_2$ . When heat is desired,  $\text{CaO}$  and  $\text{CO}_2$  are subjected to a reversed thermochemical reaction at an atmospheric pressure to inversely convert the chemical energy stored in the  $\text{CaO}$  and  $\text{CO}_2$  to heat energy and release the heat energy.

[ver más...](#)

## Systems And Methods For Communicating Power State Information From An External Energy Storage Device (EESD) To An Information Handling System

Publicada en Tecnologías asociadas a almacenamiento de energía, 30/10/2019.

Systems and methods employ an external energy storage device (e.g., intelligent battery pack) interposed between a an information handling system (IHS) and its AC-to-DC adapter. The information handling system may be a fixed compute system, may lack an internal battery and/or may execute an operating system that does not have power management capability. The external energy storage device provides power and power state information to the IHS, e.g., that is based on state of charge (SOC) of the battery and/or absence/presence of AC power. IHS may perform one or more actions based on the power state information such as automatically save data and shutdown when notified AC power is lost and/or SOC is low, and may automatically restart and restore saved data when notified AC power is restored and/or SOC is sufficiently high. The external energy storage device may actively signal or command the IHS to act or may passively supply power state information and let the IHS decide how to act. The information may be provided as different power supply identifier (PSID) values or other types of analog values corresponding to different current levels on a single conductor of a single cable between the external energy storage device and IHS, or may be included in USB vendor-defined messages sent on the single cable.

[ver más...](#)



## Electrolytic solution, electrochemical device, lithium-ion secondary battery, and module

Publicada en Tecnologías asociadas a almacenamiento de energía, 30/10/2019.

Solicitantes: DAIKIN INDUSTRIES, LTD.

Provided is an electrolytic solution with which it is possible to improve initial output characteristics and post-high temperature storage output characteristics of an electrochemical device. This electrolytic solution is characterized by comprising a compound represented by the following general formula (1). (In general formula (1), R101 are independently an organic group which may be fluorinated. X101 are independently a halogen atom, -Rc101, or -ORc101 (Rc101 is an alkyl group or an aryl group). p1 is an integer of 1-4 and q1 is an integer which satisfies  $p1+q1=4$ .)

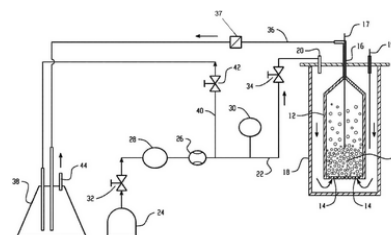
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## Method of making an energy storage article

Publicada en Tecnologías asociadas a almacenamiento de energía, 30/10/2019.

Solicitantes: United Technologies Corporation

A method of making an energy storage article having a metal nitride electrode is disclosed where metal nitride is made by nitriding particles of a metal or oxide of a metal selected from vanadium molybdenum, titanium, niobium, tungsten, or combinations including any of the foregoing by contacting the particles with a gas of nitrogen and hydrogen, or ammonia, in a fluidized bed reactor to form particles of metal nitride for the electrode.



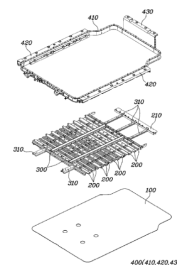
ver más...

## Vehicle battery case

Publicada en Tecnologías asociadas a baterías para transporte, 30/10/2019.

Solicitantes: Hyundai Motor Company; Kia Motors Corporation

A vehicle battery case is provided. The battery case includes a lower panel and at least one transverse member that is disposed on the lower panel to increase transverse rigidity. Additionally, at least one longitudinal member is disposed on the lower panel to increase longitudinal rigidity, and a sidewall member is attached to an upper surface of the lower panel along a rim of the lower panel.



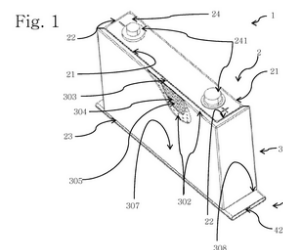
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## Vehicle electrical energy storage device thermally regulated using heat pipes

Publicada en Tecnologías asociadas a almacenamiento de energía, 30/10/2019.

Solicitantes: VALEO SYSTEMES THERMIQUES

The invention relates to a vehicle electrical energy storage device (1) configured to power at least one electric motor providing traction for the vehicle, the electrical energy storage device (1) comprising at least one electric cell (2) of parallelepipedal cross section delimited by at least two faces (21 – 23), the electrical energy storage device (1) comprising at least one heat exchanger (4) thermally coupled to the electric cell (2), at least one heat pipe (3) being thermally coupled to the electric cell (2) and thermally coupled to the heat exchanger (4), characterized in that the heat pipe (3) is thermally coupled to the at least two faces (21 – 23) of the one same electric cell (2).



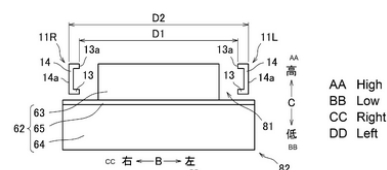
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## Vehicular battery housing, vehicular battery pack, and electric vehicle

Publicada en Tecnologías asociadas a baterías para transporte, 30/10/2019.

Solicitantes: DAIMLER AG

This vehicular battery housing (62), mounted on a vehicle (1) provided with a ladder frame (10), comprises: a first battery accommodation unit (63) disposed in a first space (81) between two side rails (11) of a ladder frame (10); and a second battery accommodation unit (64) which, in a second space (82) below the first space (81) in the vehicle height direction, is connected to the first battery accommodation unit (63) and has a greater width than the first battery accommodation unit (81) in the vehicle width direction.



[ver más...](#)

## Thermoelectric heat pump assembly with removable battery

Publicada en Tecnologías asociadas a baterías para transporte, 28/10/2019.

An active temperature controlled container is configured to be portable so as to safely transport temperature sensitive and perishable goods (such as biological material): within a vessel that is thermally coupled to a thermoelectric assembly disposed within the container, where the thermoelectric assembly is powered by a battery. The battery is secured within a compartment in an outer portion of the housing of the container in a way that the battery may be removed to be recharged, inspected, swapped out for another battery or power source, or the like.

[ver más...](#)

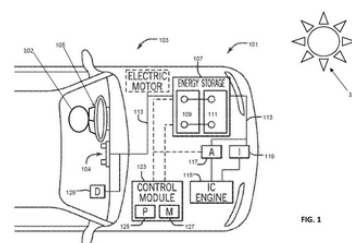
## System and method for battery selection

Publicada en Tecnologías asociadas a baterías para transporte, 23/10/2019.

Solicitantes: CPS TECHNOLOGY HOLDINGS LLC

Disclosed is a vehicle comprising a vehicle system having a system having a number of loads defining a load profile; a validated battery comprising one or more batteries which can fulfill the load profile; an integrated battery selected from the validated battery, the integrated battery selected for longevity relative to other batteries; wherein the validated battery is provided within the vehicle. Further disclosed is a battery longevity predictor comprising a plurality of battery factors; a plurality of electrical load factors; a plurality of cycling or crank data; an output; wherein the output comprises a battery longevity predictor based on the plurality of battery factors, plurality of vehicle loads, and the plurality of cycling or crank data.

[ver más...](#)



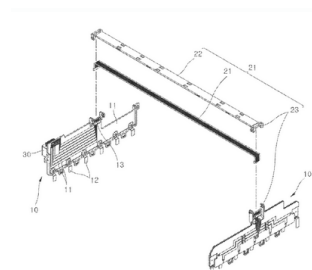
## Voltage measuring device for battery cell of vehicle

Publicada en Tecnologías asociadas a baterías para transporte, 23/10/2019.

Solicitantes: KYUNGSHIN CO., LTD.

Provided is a voltage measuring device for a battery cell of a vehicle capable of reducing the number of auxiliary parts and improving assemblability by collecting a negative voltage and a positive voltage of a battery cell, which are respectively measured by a pair of voltage measurement connection parts, at a voltage transmission connector through an electrical connection part. The voltage measuring device for a battery cell of a vehicle includes a pair of voltage measurement connection parts configured to measure a voltage of a battery cell by being respectively connected to a negative electrode and a positive electrode of the battery cell, an electrical connection part provided between the pair of voltage measurement connection parts and configured to connect the pair of voltage measurement connection parts to be electrically connectable with each other.

[ver más...](#)



## Vehicle battery controller based on a reduced order model

Publicada en Tecnologías asociadas a baterías para transporte, 21/10/2019.

A vehicle battery controller based on a reduced order model is provided. The controller identifies a value of a current output by the battery that supplies power to the vehicle. The controller provides the value of the current to a solid diffusion component, an electrolyte transport component, and a electrolyte and solid potential component. The solid diffusion component can update a solid concentration model of the battery. The electrolyte transport component can update an electrolyte concentration model of the battery. The electrolyte and solid potential component can update an electrolyte potential model and a solid potential model of the battery. The controller component can determine a value of a voltage of the battery and a value of a heat generation rate of the battery. The controller component can generate a command to manage a performance of the battery.

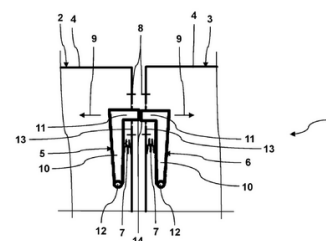
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## Preloaded battery module safety plugs

Publicada en Tecnologías asociadas a baterías para transporte, 16/10/2019.

Solicitantes: Ford Global Technologies, LLC

This disclosure relates to safety plugs for a battery of an electrified vehicle. An example battery includes a first battery module adjacent a second battery module, with each battery module having a respective housing. Further, the first battery module includes a first electrical contact and the second battery module includes a second electrical contact configured to electrically connect to the first electrical contact in a normal operating condition.



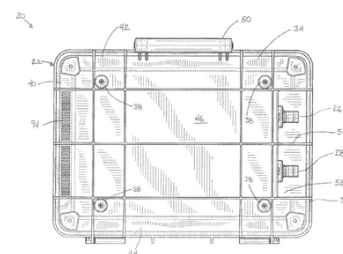
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## Vehicle programming and diagnostic device with integrated battery charger

Publicada en Tecnologías asociadas a baterías para transporte, 14/10/2019.

Solicitantes: Drew Technologies, Inc.

A vehicle computer service device for programming and/or diagnosing a vehicle computer system includes a case defining an internal compartment, with a battery charger and a control retained within the compartment. The control includes a controller and a computer having a display with the computer being operably connected with the controller and the controller configured to be operatively connected with the OBD port of a vehicle to reprogram computer control modules of the vehicle.



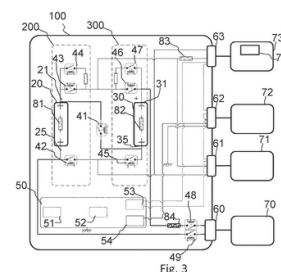
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## Rechargeable battery system for a vehicle

Publicada en Tecnologías asociadas a baterías para transporte, 09/10/2019.

Solicitantes: PSA AUTOMOBILES SA

The invention relates to a rechargeable battery system (100) for a vehicle, the system comprising at least two sub-systems of batteries (200, 300), each provided with two connection terminals, control means (50, 41-49), at least one recharging interface (60), and at least one consumption interface (63), the control means (50, 41-49), being suitable for connecting in parallel the terminals of said at least two sub-systems of batteries (200, 300) to the recharging interface (60) while the battery system is recharging, and to the consumption interface (63).



[ver más...](#)

## Power source system for vehicle

Publicada en Tecnologías asociadas a baterías para transporte, 03/10/2019.

Solicitante: SUZUKI MOTOR CORPORATION

[Task] To provide a power source system capable of preventing undesirable discharging from a capacitor in a path that interconnects a rechargeable power inside a vehicle and a DC power inlet:[Solution] A power source system includes a fast charging inlet 9, to which a DC power 10 is connectable; a capacitor (31, 32, 33) in a path that interconnects a positive terminal of the fast charging inlet 9 and a negative terminal of the fast charging inlet 9; an electrical load 4, to which a rechargeable battery 51 is connectable; a first switch 11 in a path that interconnects a positive terminal of the fast charging inlet 9 and the capacitor(31, 32, 33); a second switch 12 in a path that interconnects a negative terminal of the fast charging inlet 9 and the capacitor (31, 32, 33); a first diode 21 that is arranged to allow current to flow in only one direction toward the capacitor (31, 32, 33) from the positive terminal of the fast charging inlet 9; and a second diode 22 that is arranged to allow current to flow in only one direction toward the negative terminal of the fast charging inlet 9 from the capacitor (31, 32, 33). The first diode 21 and the first switch 11 are connected in parallel. The second diode 22 and the second switch 12 are connected in parallel.

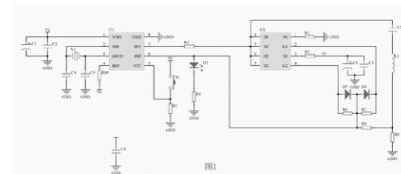
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## Wireless charging and power storage assembly for high-power mouse

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 02/10/2019.

Solicitantes: WILLJOY INNOVATIVE TECHNOLOGY, INC.

A wireless charging and power storage assembly for a high-power mouse, comprising a wireless power transmission module and a power receiving and storage module. The wireless power transmission module comprises an MCU, an alternating voltage boosting IC, a resonant circuit, and a monitoring unit. An MCU oscillation signal is sent to the alternating voltage boosting IC, and the alternating voltage boosting IC drives the resonant circuit to generate an induced electromagnetic field. The monitoring unit is connected to a pin of the MCU. The monitoring unit is one or a combination of a vibration sensing switch and an infrared transceiver.



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## PUBLICACIONES CIENTÍFICAS

### Data on reducing carbon footprint in microgrids using distributed battery energy storage

Publicada en <https://www.sciencedirect.com>, 01/12/2019.

This data presented in this article was collected using simulations on a microgrid system to analyze reduction of carbon footprints using distributed battery storage devices. Analysis was performed over a 24-h period of operation of the microgrid system to reduce the CO<sub>2</sub> emissions from 0% to 100% using battery storage devices. The data can be used in designing efficient microgrid systems, understanding the potential of battery energy storage devices in future electricity generation, and sizing the microgrid systems depending of the CO<sub>2</sub> reduction goals in power systems.

[ver más...](#)

### Optimization of pulse current on energy storage of zinc-air flow batteries

Publicada en <https://www.sciencedirect.com>, 01/12/2019.

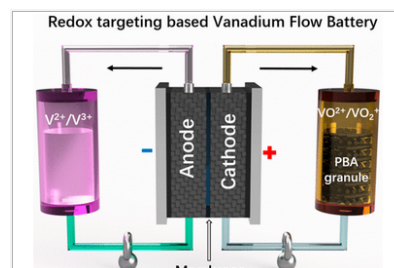
The energy storage of a zinc-air flow battery subject to a pulse current is experimentally addressed. The energy storage occurs in the form of zinc reduction during the charging process. The controlling parameters, affecting the zinc reduction, are an electrolyte temperature, a pulse current, a pulse frequency, and a duty cycle.

[ver más...](#)

## Redox Targeting-Based Vanadium Redox-Flow Battery

Publicada en ACS Energy Letters, 21/11/2019.

The low energy density and narrow operating temperature window besides the relatively high cost of the vanadium redox-flow battery (VRB) severely hinder its commercial deployment. Herein, in conjunction with low-concentration  $\text{VO}_2^+/\text{VO}_2^+$  catholyte, we introduce a redox targeting-based VRB (RT-VRB) system in which a Prussian blue analogue (PBA),  $(\text{VO})_6[\text{Fe}(\text{CN})_6]_3$ , is employed as a capacity booster to address the above issues. The charges are reversibly stored in the PBA loaded in the cathodic tank via a redox-targeting reaction with the  $\text{VO}_2^+/\text{VO}_2^+$ .

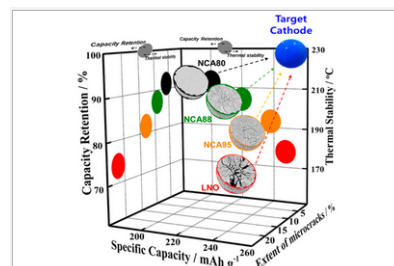


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## Capacity Fading of Ni-Rich NCA Cathodes: Effect of Microcracking Extent

Publicada en ACS Energy Letters, 20/11/2019.

Ni-rich  $\text{Li}[\text{Ni}_{1-x-y}\text{Co}_x\text{Al}_y]\text{O}_2$  (NCA) cathodes ( $1 - x - y = 0.8, 0.88, \text{ and } 0.95$ ) are synthesized to investigate the capacity fading mechanism of Ni-rich NCA cathodes. The capacity retention and thermal property of the cathodes deteriorate as their discharge capacity increases when the Ni fraction is increased. The capacity fading correlates well with the anisotropic volume variations caused by the H2–H3 phase transition and the resulting extent of microcracking.



[ver más...](#)

## Energy storage properties of polyimide/BaTiO<sub>3</sub> nanocomposite films and their breakdown mechanism in a wide content range

Publicada en AIP Scitation, 17/11/2019.

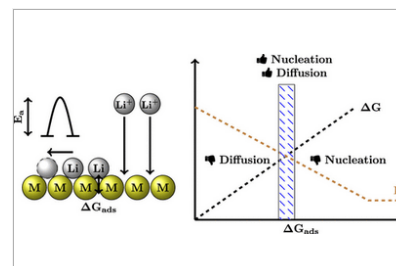
Applied Physics Letters, Volume 115, Issue 21, November 2019. Polyimide (PI) has excellent dielectric properties with superior thermal stability, and it is considered as a promising polymer dielectric for energy storage capacitors. Here, we studied the energy storage properties of PI composite films with BaTiO<sub>3</sub> (BT) nanoparticles in a wide content range. Benefiting from the high breakdown strength (520 kV/mm), the nanocomposite filled with 0.05wt. % of BT exhibits an increased energy density of 4.51 J/cm<sup>3</sup> at room temperature and keeps a good thermal stability (3.22 J/cm<sup>3</sup> at 100°C). Additionally, trap properties of the nanocomposites and their effect on breakdown strength were studied by thermally stimulated depolarization current. It was found that the dominant trap parameter on breakdown strength variation, with the increase in the BT content, is correlated with deep traps, deep and shallow traps especially their depths, and shallow trap density. Then, a physical quantity of average trap depth was introduced, the value of which decreases from 0.81 eV to 0.44 eV as the BT content increases to 50wt. %, and a clear correspondence was discovered between the average trap depth and breakdown strength.

[ver más...](#)

## Computational Screening of Current Collectors for Enabling Anode-Free Lithium Metal Batteries

Publicada en ACS Energy Letters, 14/11/2019.

Lithium metal cells are key for achieving high specific energy for electrification of transportation and aviation. Anode-free cells are lithium metal cells involving no excess lithium with the highest possible specific energy. In addition, anode-free cells are simpler, cheaper, and safer because they avoid the handling and manufacturing of lithium metal foils. The lack of excess lithium magnifies issues related to dendrite growth and poor cycling in anode-free cells.

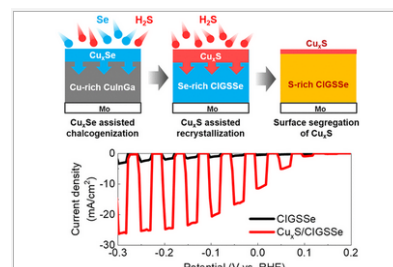


[ver más...](#)

## Cu(In,Ga)(S,Se)<sub>2</sub> Photocathodes with a Grown-In Cu<sub>x</sub>S Catalyst for Solar Water Splitting

Publicada en ACS Energy Letters, 14/11/2019.

As CuInGa-based chalcopyrite photocathodes suffer from poor hydrogen evolution activity, n-type overlayers and hydrogen evolution catalysts (HECs) need to be deposited on the film surface to drive surface band bending and reduce the overpotential for the hydrogen evolution reaction (HER). Here, we present a Cu(In,Ga)(S,Se)<sub>2</sub> (CIGSSe) photocathode with grown-in Cu<sub>x</sub>S HECs enabling solar water splitting without the deposition of additional n-type overlayers and HECs.

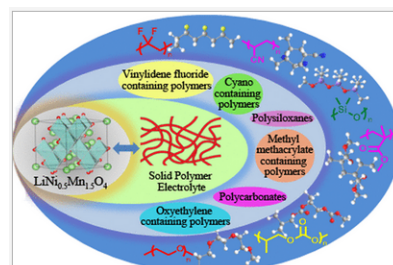


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## Overcoming the Challenges of 5 V Spinel LiNi<sub>0.5</sub>Mn<sub>1.5</sub>O<sub>4</sub> Cathodes with Solid Polymer Electrolytes

Publicada en ACS Energy Letters, 07/11/2019.

High-voltage spinel manganese oxide LiNi<sub>0.5</sub>Mn<sub>1.5</sub>O<sub>4</sub> (LNMO) that possesses high energy densities, high thermal and electrochemical stabilities, good operating safeties, low costs, and good rate performance has been well recognized to have great potential for power batteries. Despite these merits, unqualified electrolytes are still a big obstacle toward mass production of LNMO-based lithium-ion batteries (LIBs).

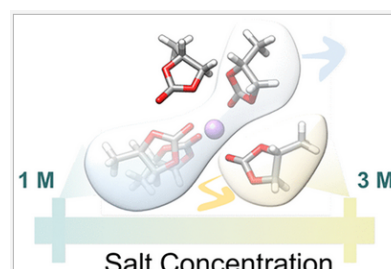


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## Transport in Superconcentrated LiPF<sub>6</sub> and LiBF<sub>4</sub>/Propylene Carbonate Electrolytes

Publicada en ACS Energy Letters, 06/11/2019.

Superconcentrated electrolytes for lithium-ion batteries have shown promise in circumventing certain limitations of conventional carbonate electrolytes at lower concentrations while introducing new challenges such as decreased conductivity. We use molecular dynamics simulations with diffusion and residence time analyses to elucidate the main modes of transport of LiPF<sub>6</sub> and LiBF<sub>4</sub> in propylene carbonate at concentrations ranging from 1 to 3 M.

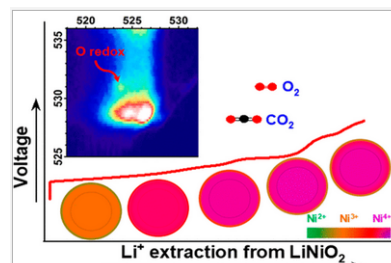


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## Unraveling the Cationic and Anionic Redox Reactions in a Conventional Layered Oxide Cathode

Publicada en ACS Energy Letters, 05/11/2019.

Increasing interest in high-energy lithium-ion batteries has triggered the demand to clarify the reaction mechanism in battery cathodes during high-potential operation. However, the reaction mechanism often involves both transition-metal and oxygen activities that remain elusive. Here we report a comprehensive study of both cationic and anionic redox mechanisms of LiNiO<sub>2</sub> nearly full delithiation.

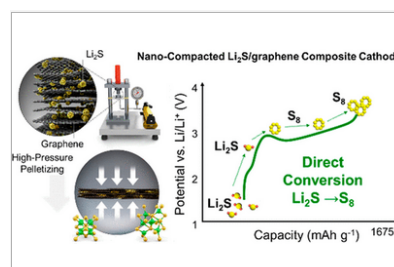


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## Nano-compacted Li<sub>2</sub>S/Graphene Composite Cathode for High-Energy Lithium–Sulfur Batteries

Publicada en ACS Energy Letters, 31/10/2019.

A mixture of graphene and Li<sub>2</sub>S is pelletized by a volume reduction of 220% to synthesize a high energy density cathode for lithium–sulfur (Li–S) batteries. The compacted graphene/Li<sub>2</sub>S composite cathode, in addition to providing robust electrical pathways, drives Li<sub>2</sub>S metastable particles to metastable states (high-pressure polymorphs with a highly deformed mechanical state), triggering a spontaneous conversion of Li<sub>2</sub>S to S<sub>8</sub> in the first charging process.

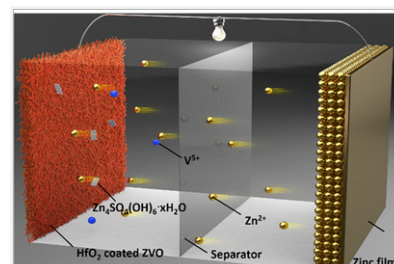


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## Artificial Solid Electrolyte Interphase for Suppressing Surface Reactions and Cathode Dissolution in Aqueous Zinc Ion Batteries

Publicada en ACS Energy Letters, 29/10/2019.

Vanadium-based compounds have been widely used as electrode materials in aqueous zinc ion batteries (ZIBs) due to the multiple oxidation states of vanadium and their open framework structure. However, the solubility of vanadium in aqueous electrolytes and the formation of byproducts during the charge/discharge process cause severe capacity fading and limit cycle life. Here, we report an ultrathin HfO<sub>2</sub> film as an artificial solid electrolyte interphase (SEI) that is uniformly and conformally deposited by atomic layer deposition (ALD).

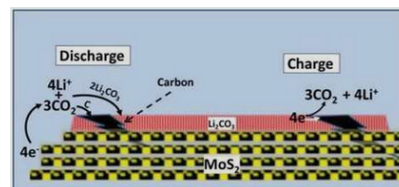


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## Li-CO<sub>2</sub> Batteries Promise 7 Times The Energy Density Of Lithium-Ion

Publicada en Inside EVS, 01/10/2019.

You may think that lithium-ion batteries are the best man can create, but researchers believe otherwise. There are other combinations of elements that are very promising. What about a cell with potential for seven times more energy density than Li-Ion could ever achieve? State of the art for current batteries would be 256 Wh/kg. Lithium-Carbon Dioxide batteries – or Li-CO<sub>2</sub>, for short – can theoretically reach 1,876 Wh/kg.



[ver más...](#)

