

KEEPING UP WITH BATTERIES







We have sifted through 1000s of articles on lithium-ion batteries for you! We have captured pretty much everything new and important that came out in *December 2017*. We have selected and categorized commercially-relevant articles, added some interesting news, and squeezed all this content into our comprehensive review.

Hope it makes your work easier and keeps you in touch with the battery literature!





The Research Interfaces Team








CELL COMPONENTS & MANUFACTURING



Corrosion/passivation of Al current collectors at high temperature	link				
Protective coating of Al collectors for HV chemistries	link		NMC		
Electrode partition for impact tolerance of Li-ion batteries	link				
Electrolyte-resistant epoxy for bonding batteries	link				
Capillary electrophoresis for quality monitoring of LFP manufacture	link				
Status and challenges in printed batteries	link				
Propane-based cooling system for prismatic Li-ion batteries	link				

LEGEND












-  – link to the article or website
-  – collaboration with industry
-  – application / Li-ion chemistry
-  electric vehicles/EVs

-  grid storage
-  wearables & healthcare
-  recycling
-  policy
-  – open access
-   – review article or highlight

*Other abbreviations are chemistry or engineering specific and commonly used throughout the field (e.g. KF = Kalman filter). If you are unclear, please click the link to see.

**Mistakes are unavoidable, so please forgive us if you find any.

CELL BEHAVIOR

Thermal gradients and their control in Li-ion cell	link				
Visualization of self-heating pouch cell by infrared thermography	link				
Influence of charging/discharging on 18650 cell thermal runaway	link				
Fire hazards of Li-ion batteries under overcharging	link		NMC, LFP		
Optimization of TMS using phase change material	link				
Phase-change material for thermal management of LFP batteries	link				
Phase-change materials for automotive applications	link				 
Cooling simulation and thermal abuse modeling of Li-ion batteries	link				
Influence of constant voltage charging during cell formation	link				
Challenging sinusoidal ripple-current charging of Li-ion batteries	link				
Nonlinear frequency response analysis on Li-ion batteries	link				
Physical-based electrical model of Li-ion battery	link				
Physics-based electrochemical model of anode half cell	link				

Development of duty cycles for high-performance EV applications	link				
Mechanical loading and response of batteries	link				
SoH-dependent LCO particle distribution in cell phone batteries	link			LCO	

NEWS BOX

Toyota Plans to Roll Out 10 All-electric Vehicles ([Fortune](#))



Toyota Deepens Panasonic Battery Ties in Electric-car Rush ([Bloomberg](#))

"While Nissan Motor Co. has sold some 300,000 of the all-electric Leaf since 2010 and Tesla Inc. has delivered more than 250,000 EVs since the first Roadster rolled out in 2008, neither Toyota, Mazda nor Suzuki offer battery-powered passenger cars."

Ford Ramps up Electric Vehicle Push in China Amid Slowing Sales ([Reuters](#))

"China is pushing automakers toward electric and hybrid petrol-electric vehicles, setting tough quotas for new energy vehicles that come into play in 2019, and has signaled a longer-term shift away from traditional internal combustion engine cars."

Tesla Isn't the Only Company Creating Cool Electric Vehicles Anymore ([The Washington Post](#))

BATTERY MANAGEMENT



SoC estimation methods and their error analysis	link				
SoC estimation using extended and central difference KF	link				
Dual square root cubature KF for SoC estimation	link				
Unscented KF observer design for SoC estimation	link				
Cubature KF for online estimation of model parameters	link				
Extended KF and RLS method for SoC and parameter estimation	link				
SoH detection based on adaptive unscented KF	link				
State of function estimation based on fuzzy logic algorithm	link				
SoH estimation using indirect health indicators	link				
SoH estimation relating ohmic resistance and capacity fade	link				
Nonlinear observer with adaptive gains for SoC estimation	link				
PNGV modeling and SoC estimation for LFP batteries	link		LFP		
Real-time impedance and OCV identification for SoH diagnosis	link				
Fractional-order nonlinear estimator for SoC	link				
SoC estimation algorithms with online parameter identification	link				
Neural-network soft sensor for SoH of LFP batteries	link				
Back-propagation neural network algorithm for SoC estimation	link				

Battery pack SoH estimation using AI optimization algorithm	link		
Li-ion battery model incorporating temperature and ageing effects	link		
Charging of LFP batteries minimizing charging temperature rise	link	LFP	
Bayesian hierarchical model-based prognostics	link		
Cell-level ECM model for different chemistries and temperatures	link	NMC, LFP, LTO	★
Battery models and parameter identification techniques	link		🔒 🔍
Analysis of sensitive characteristics of Li-ion batteries	link	🚗	🔒
Model-based diagnostics of battery thermal faults	link		
Virtual impedance emulation for parameter-independent control	link		
Degradation in LFP battery using differential thermal voltammetry	link	LFP	

 NEWS BOX

The Latest Bull Case for Electric Cars: the Cheapest Batteries Ever ([Bloomberg](#))

“Lithium-ion battery packs are selling at an average price of \$209 a kilowatt-hour, down 24 percent from a year ago and about a fifth of what it was in 2010, a Bloomberg New Energy Finance survey shows.”

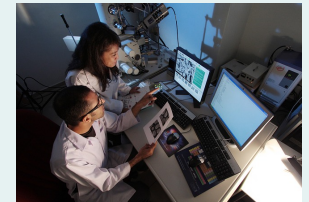
Autonomous Cars Need Tougher Batteries, Lithium-ion Pioneer Says ([Bloomberg](#))

Honda and Nissan Said to Be Developing Next-generation Solid-state Batteries for Electric Vehicles ([The Japan Times](#))

“Toyota said it is in talks with Panasonic Corp. to team up on developing and producing lithium ion and next-generation solid-state batteries.”

Solid Power, BMW Partner to Develop Next-generation EV Batteries ([Reuters](#))













































Akasol Opens up Europe’s Largest Battery Production Facility for Commercial EVs ([Greentech Media](#))



 BATTERY MODULES & PACKS



Framework for analyzing battery pack equalization circuits	link		
Multi-layer modular balancing of cells in battery pack	link	📊	
Four-phase balance charger for series-connected batteries	link		🔒
Hierarchical balancing algorithm for large-scale AC battery packs	link		
Bilevel equalizer for large Li-ion batteries	link	🏠 🚗	🔒
Efficiency evaluation of inverter topology systems for EVs	link	🚗	🔒 (pdf)
Thermal analysis of Li-ion battery pack	link		
Thermal model for EV 18650 battery module	link	🚗	★
Optimization of parallel air-cooled battery TMS with U-type flow	link		

 APPLICATIONS, RECYCLING & POLICY					
Development of duty cycles for high-performance EV applications	link				★
Assessing driving pattern for specific energy use of EVs	link				
LCA of ICE and EV drivetrains	link				
LCA model of energy consumption and gas emissions of EVs	link				
Component sizing optimization of supercapacitor-battery PHEV	link				
Impact of EV penetration in interconnected smart city	link				
Role of EVs in future road transport	link				Book
Viability of off-grid PV-battery storage system for charging EVs	link				
Integration of EVs in Internet of Energy	link				
Reuse of EV batteries in European electricity grid	link				
Stationary battery storage systems for modern power grid	link				🔍 ★
Economic model for residential clean energy management	link				
Simulated potential of battery storage system for grid balancing	link				
Economics of electrical storage to manage intermittent generation	link				
Cost metrics of energy storage technologies in power systems	link				
Wearable self-charging power systems	link				
Battery safety information on e-cigarette packages	link				
Sprinkler protection guidance for warehouse battery storage	link				
Recycling of Li-ion batteries	link				Book ★
Management and recycling of spent Li-ion batteries	link				🔍
Review and analysis on recycling of spent Li-ion batteries	link				🔍 ★
Electrochemical leaching of metals from spent NMC batteries	link				
Recovery of metals from spent NMC batteries using malic acid	link				
Acidic leaching process for recycling of spent Li-ion batteries	link				
Reuse of anode graphite as cathode in electro-Fenton system	link				
Bacterial bioleaching of spent Li-ion laptop batteries	link				
Microbial recovery of metals from Li-ion battery waste	link				Book

 NEWS BOX



Tesla mega-battery in Australia activated ([BBC](#))

'Mr Musk said that if the 100-megawatt battery wasn't built within 100 days, the state would receive it for free. The countdown began on 30 September after a plan was approved by the state government and regulators. Tesla finished the battery in about 60 days.'

Honda Is Working on Bi-directional Charging Technology for Its Electric Vehicles ([Electrek](#))