1. Record Nr. UNISA996336791103316

Titolo	Financial independence
Pubbl/distr/stampa	[Washington, D.C., : Capitol Planning Corp. Communications Division]
Soggetti	Finance - Management Finance, Personal - Management
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Periodico

2. Record Nr. UNINA9910812801903321

Autore	Bloch Didier
Titolo	Li-Ion Batteries : Development and Perspectives / / Didier Bloch [and three others]
Pubbl/distr/stampa	[Place of publication not identified] : , : Science Press, EDP Sciences, , [2021] ©2021
Edizione	[First edition.]
Descrizione fisica	1 online resource (430 pages)
Collana	Current Natural Sciences Series
Disciplina	621.312424
Soggetti	Lithium ion batteries Electric batteries
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Intro -- Li-ion Batteries -- Preface -- Contents -- Introduction -- Brief History of Primary and Secondary Batteries -- General Information on Li-ion Batteries -- Bibliography -- Positive Electrode Materials for "Lithium-ion" Accumulators -- Positive Electrode Materials of "Spinel" Structure -- Positive Electrode Materials with Lithiated Layered Oxide Structure -- Positive Electrode Materials with Olivine Structure -- References -- Negative Electrode Materials -- Negative Electrode Materials: Several Solutions -- Insertion-Intercalation -- Conversion --

Alloying -- Carbon -- Historical Background -- Interest -- Relationship between Structural Characteristics and Performance -- Silicon -- (De) lithiation Mechanisms -- Degradation Mechanisms -- Material Improvement Approaches -- Lithium Metal -- Bibliography -- Organic Electrode Materials -- Different Types of Organic Electrode Materials -- -Extended System (Conducting Polymers) -- Polypyrrole Derivatives (PPy) -- Polythiophene Derivatives (PTh) -- Polyaniline Derivatives (PANI) -- Stable Radical -- Organosulfides &amp -- Thioethers -- Carbonyl Functions -- Aromatic Amines -- Implementation Strategies -- Grafting on Inorganic or Organic Support -- Functionalization of Neutral Polymers -- Functionalization of Conducting Polymers -- Stabilization by Physisorption -- Polyanionic Salt Formation -- References -- Electrolytes and Separators -- Liquid Electrolytes -- Lithium Salts and Organic Solvents -- Basic Properties and General Observation -- State of the Art, Its Limitations and Research to Overcome Them -- Lithium Salts and Ionic Liquids -- Separators -- Properties of Separators -- The Separator Market -- Cost and Security -- Bibliography -- Na-ion Batteries: Should/Can Lithium be Replaced? -- General Aspects -- Should Lithium be Replaced? -- Lithium Resources -- Lithium Cost.
Can Lithium be Replaced? Towards a 100% Abundant Element-Based Battery -- The Na-ion Technology -- Brief History -- Operating Principle -- State of the Art -- Negative Electrode Materials -- Graphite -- Hard Carbon -- Non-Carbon Materials -- Positive Electrode Materials -- Layered Oxides -- Polyanionic Materials -- Electrolytes and Interfaces -- Full System Performance -- Outlook -- Low Cost Approach -- High Power Approach -- References -- Metal-Sulfur Batteries -- The Metal-Sulfur Cell -- Advantages and Comparison with Other Technologies -- Working Mechanism of the Metal-Sulfur Cell -- The (Li,Na)-ion Sulfur Cell -- Technology State of the Art and Performances -- Main Actors -- Understanding the Complex Mechanism -- Development Strategies -- All-Solid-State Metal-Sulfur Batteries -- Industrial Actors -- Perspectives and Applications -- Bibliography -- All Solid-State Batteries -- Introduction and Overview -- Main Families of Solid Ionic Conductors -- Polymeric Solid Electrolytes -- Inorganic Solid Electrolytes -- Oxides -- Oxyhalides with Anti-Perovskite Structure -- Borohydrides - Boranes -- Sulfide Solid Electrolytes: Glasses and Ceramics -- Hybrid Solid Electrolytes -- Electrochemical Stability of Solid Electrolytes -- All-Solid-State Cells -- Academic &amp -- Industrial Players -- Bibliography -- Supercapacitors: From Material to Cell -- Operating Principle -- Carbon/Carbon Based Technology -- Electrode Design and Components -- Current Collector -- Activated Carbons for Supercapacitors -- Sec7 -- Sec8 -- Sec9 -- Sec10 -- Binders -- Sec12 -- Sec13 -- Conductive Additives -- Electrolyte -- Impact of Electrolyte on Performance -- Conductivity -- Ions and Concentration Limitations -- Solvents -- Electrochemical Stability and Ageing -- Electrochemical Stability of Ions and Solvents -- Electrolyte-Related Causes of Ageing. Thermal Stability and Performance -- Toxicity -- Issue with the Substitution of Acetonitrile -- Solid State Electrolyte -- Electrolyte Organization in the Carbon Based Electrodes -- Separators -- Requirement Specifications of Separator -- Cellulose Based and Polymer Based Separators -- Hybrid Systems -- Activated Carbon/MnO2 System -- Lead Oxide/Activated Carbon System -- NiOOH/Activated Carbon System -- Graphite/Activated Carbon System -- Lithium-ion Capacitor Technology -- Sodium-ion Capacitor Technology -- Potassium-ion Capacitor Technology -- Bibliography -- Supercapacitors: Cells and Modules -- Cell Design -- Small Cells --

High-Capacity Cells -- High Power Cells -- Energy Type Cells -- "Pouch" Cell Design -- Cells Working in Aqueous Medium -- Present Performance of EDLC -- Design of Modules and Systems -- Modules Based on Hard Casing Cells -- Metallic Connections between Cells -- Module Terminals -- Insulators in Module -- Cell Balancing and Other Detected Information -- Module Casing -- High Capacity Modules Based on Soft Packaging Cells (Pouch Cells) -- High Capacity Modules Working in Aqueous Medium -- Bibliography -- Characterization of the Electrical Performance of Li-ion Cells -- Characterization of the Electrical Performance of Individual Cells -- Acceptance Tests -- Beginning of Life Performance Tests -- Capacity, Energy, Resistance and Power Measurements -- Faradic and Energy Efficiency -- Comparison of Beginning of Life (BoL) Performance of Li-ion Cells -- Ageing Performance Tests -- Ageing Conditions -- Ageing Follow-Up by Incremental Capacity Analysis (ICA) and Differential Voltage Analysis (DVA) -- Comparison of the Ageing Performance of various Li-ion Cells -- Resistance Measurements of Individual Cells -- Introduction -- How to Define an Internal Resistance? -- Different Methods of Measuring Internal Resistance.
Measurements from Polarization Curves -- Measurement with Open Circuit Voltage Variation -- Current Pulse Measurements -- Current Pulse Measurements and Extrapolation of Voltage Values -- Electrochemical Impedance Spectroscopic Measurements -- Calorimetric Measurements -- Conclusion -- Bibliography -- Microstructural and Physical and Chemical Characterizations of Battery Materials -- Introduction: Characterization Methodology to Understand the Electrochemical Response of a Battery -- Analysis of Mechanisms Associated with Exchangeable Lithium Loss -- SEI Formation and Li Metal Precipitation on Negative Electrode -- Loss of Lithium Content of Positive Electrode -- Analysis of Phase Transformations that Limit Lithium Mobility -- Microstructural Modification of a Positive Electrode -- Mechanical Blocking, Obstruction, Disconnection and Loss of Electrical Contact -- Loss of Graphite Electrode Capacity in Cycling at Low Temperatures -- Exogenous Deposits -- Electrolyte Degradation -- Perspectives -- Bibliography -- Cell and Electrode Manufacturing Process -- General Principles -- Cell Design -- Electrode Manufacturing Process -- Electrode Formulation -- Slurry Preparation -- Mixing Process -- Slurry Control -- Electrodes -- Calendering -- Cell Fabrication Process -- Slitting -- Cell Assembly -- Electrolyte Filling -- Electrical Formation -- Cells Bill of Materials and Cost Aspects -- New Processes/Perspectives -- Conclusion -- Bibliography -- Battery System and Battery Management System (BMS) -- Battery System Architecture -- Battery System in Its Electrical Environment -- Power Component Associated to Battery Pack -- Multiples Functions of BMS -- Design and Manufacture of Battery Packs -- Examples of Innovation on Battery Systems -- References -- Definition of the State Estimation Algorithms of a Battery System and Associated Calculation Methods.
Battery State Indicator Definition -- State of Charge -- State of Energy -- State of Health -- State of Function -- State of Safety -- Battery Diagnosis Methods -- State of Charge Estimation -- Coulomb Equation - Description of the Conventions -- Battery Cell Voltage Modelling -- Modelling and Bayesian Inference -- State-Space Observer -- Optimal Bayesian Filter -- Kalman Filter Design -- Kalman Filter Exploitation for State of Charge Estimation -- Improving the Estimation Performance: The Sigma Point Kalman Filter -- Sigma Point Kalman Filter Application to SOC Estimation -- Battery Total Capacity Estimation -- Framework -- Linear Regression -- Alternative Battery State Diagnosis Method --

Bibliography -- Standards and Safety -- Phenomena Involved in Abusive Conditions -- Phenomena at Cell Level -- Phenomena at Module and Pack Level -- Regulation -- Standards -- Tests and Additional Analysis -- Solutions to Improve Safety at Different Levels -- Improvement of the Components within the Cell -- Separator -- Negative Electrode -- Positive Electrode -- Electrolyte -- Fostering the Formation of the SEI -- Positive Electrode Protection Agents -- Salt Stabilizers -- Protection Agents -- Improving Lithium Deposition (Avoid Growth of Dendrites) -- Other Agents -- Safety Devices at Cell Level -- Positive Temperature Coefficient -- Current Interrupter Device -- Venting -- PCB ("Printed Circuit Board") -- Safety Devices at the Module and Battery System Level -- Electrical Devices -- Electronic Devices -- Chemical Devices -- Thermal Devices -- Mechanical Devices -- Conclusions and Prospects -- Bibliography -- Li-ion Battery Recycling -- Contextual Elements -- Process Head -- Process Core (Separation - Valorization) -- Pyrometallurgy -- Hydrometallurgy -- Leaching of Waste -- Treatment to Recover and Minimise Ultimate Wastes -- Conclusion -- References.
Li-ion Batteries Environmental Impacts and Life Cycle Assessment (LCA).