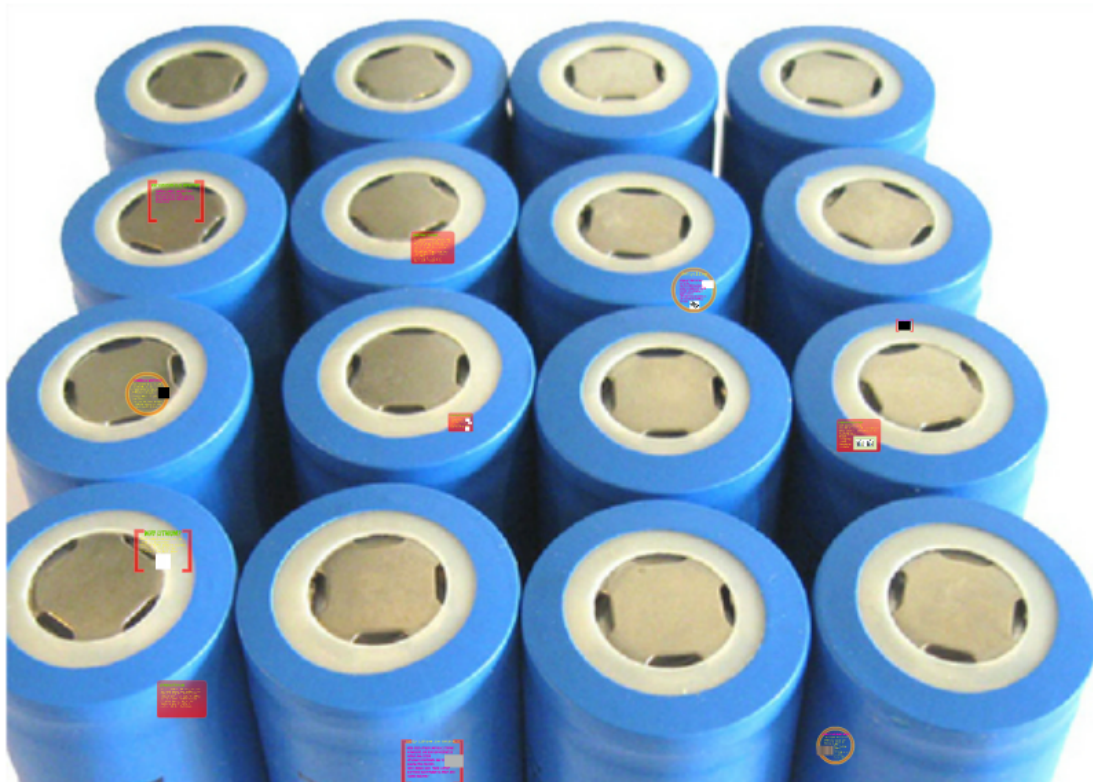


FAST ION BATTERY HARVARD CASE SOLUTION & ANALYSIS

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LITHIUM (LI) WHAT IS IT?

- third element in the periodic table
- discovered by Johan Arfwedson in 1817
- Alkali metal; highly reactive
 - Of all battery metals, lithium gives off the most usable energy



WHY LITHIUM?

- Most alkali metals can be used as batteries
- Rechargeable battery wanted
- Gives off most energy; provides the most power



LITHIUM BATTERY USE

- Of all alkali metals, lithium is most ideal for battery use
- Has the highest electrical output per unit weight; gives off the most usable energy
- Started being tested for battery use in 1970's
- a.k.a. li-ion batteries

Early Lithium Ion Batteries

- **USED SOLID LITHIUM (METALLIC LITHIUM)**
- **DANGEROUS; CAN BURN IN PRESENCE OF WATER AND OXYGEN**
- **EXTREMELY FLAMMABLE DUE TO OVERHEATING (SPARKS)**
- **EARLY MODELS (CELL PHONE, LAPTOP BATTERIES) WERE KNOWN TO BURST INTO FLAMES SUDDENLY**



BOEING 787 DREAMLINER INCIDENT

- Batteries overheated
- Caused fires on two planes at gates in Boston airport
- Overheating caused sparks, lithium is so reactive, fires started



LITHIUM ION BATTERIES TODAY

- Use lithium ions
- Travel from anode to cathode
- Also enable batteries to be rechargeable
- While charging; anode
- Discharge cathode

