U.S. Department of Energy
LITHIUM-ION BATTERY RECYCLING PRIZE

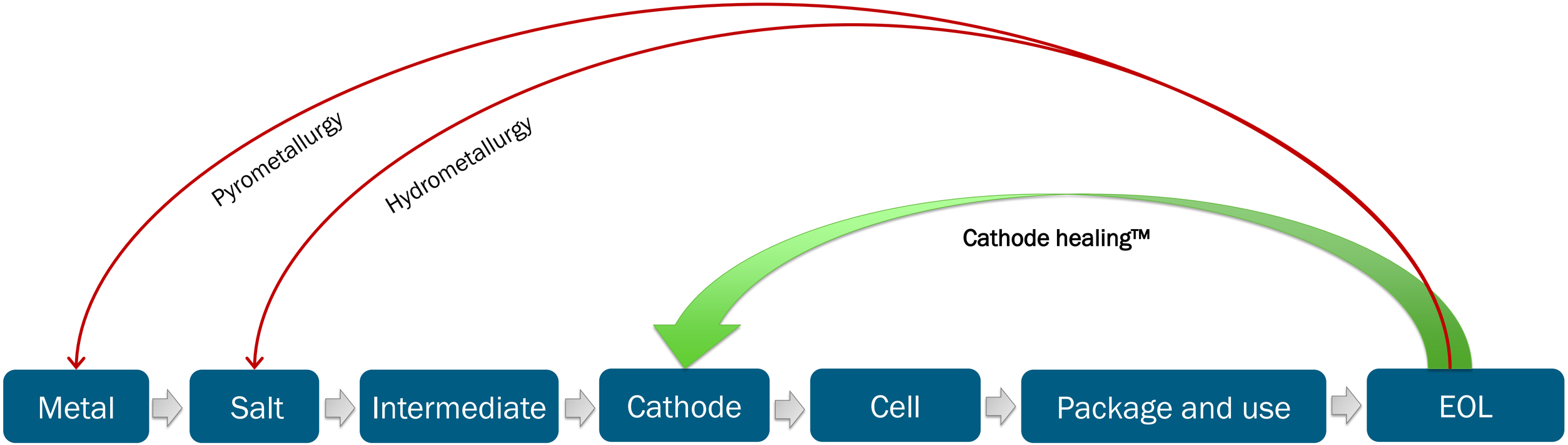
OnTo Technology

Track 2: Sorting

AMERICAN MADE BATTERY RECYCLING PRIZE
U.S. DEPARTMENT OF ENERGY

Li-ion Identification For the Next Generation of Cathode Recycling

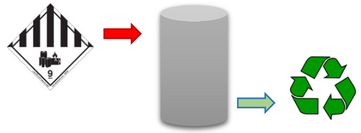
Sorting for efficient recycling



Sorting and safe disassembly

Sorting Technology (patented)
Automated, based on physical properties

Deactivation (patented)
Permanently removes hazards



Elemental Detector
Low energy, rapid, inexpensive
Al Mn Ni Co

Density, Shape measurement → Deactivate → Waterjet (or shred) → Quality Control → Bin by chemistry

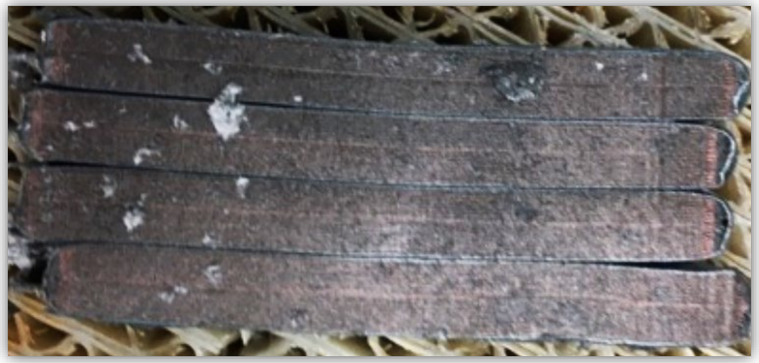
Non Li-ion

- LCO
- LFP
- NCA
- NCM 523
- NCM 622

Waterjet technology & batteries

SHAPE TECHNOLOGIES GROUP

- **Safe**
  - Nonflammable
  - Controllable
- **Rapid, precise**
- **High material recovery**
- **Preserves purity**
- **Great AI interface**

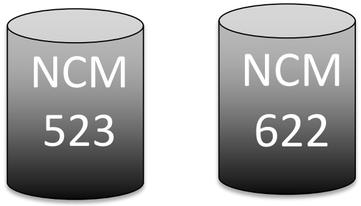


Features of OnTo's solution

Safe

Automated

Inexpensive



Distinguish NCMs

Safe to Store

Team Introduction

Steve Sloop, Ph.D.
Founder and President of OnTo
Pioneer in direct recycling
14 patents

Lauren Crandon, Ph.D.
Chemical & Environmental engineer
Expert in nano-particulate
environmental health & safety

Tucker Holstun
Chemical Engineering
intern

Michael Lerner, Ph.D.
Oregon State Univ. program director
World leader in solid state materials.

Dylan Howes
VP, Global Business Development
Shape Technologies Group.

Marc Gossack
30 yrs experience in systems
engineering, software architecture
design, hardware automation

Josie Alberts
Graphic designer, skilled in CNC
cutting software

Talon Swanson
Environmental Health & Safety,
Seattle King County Metro Transit

OnTo Technology LLC

SHAPE TECHNOLOGIES GROUP

Oregon State University

King County METRO
We'll Get You There

AMERICAN MADE
BATTERY RECYCLING PRIZE

U.S. DEPARTMENT OF ENERGY

Thank you!

OnTo Technology LLC
Bend, OR

Competition

Competition

- Powerful, expensive X-rays
- Manual sorting
- Dangerous to handle batteries
- Expensive, designed for large processing facility
- Bins into few categories
- Binned batteries must be immediately processed

OnTo

- Low energy detection
- Automated sorting
- Safe deactivated batteries
- Inexpensive, reproducible at every transfer station
- Can distinguish between NMC
- Binned batteries safe to store and transport

Elemental Detection