U.S. DEPARTMENT OF ENERGY

TODA AMERICA

DOE Merit Review

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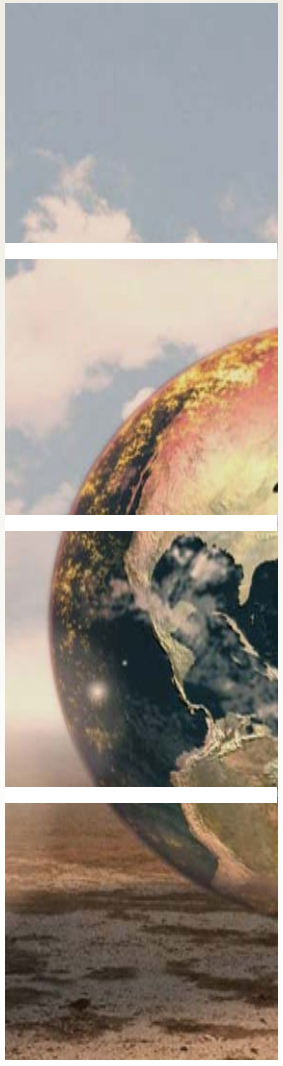
Washington D.C.

Jun Nakano, David Han, Yasuhiro Abe

Toda America Inc.



Project ID: ARRAVT017
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Overview

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Li-ion Cathode Materials Production Facility

❑Timelines

- ➢Start: February, 2010
- ➢Finish: December, 2013
- ➢1st Line Schedule: Feb., 2011
- ➢Completion: ~10%

❑Challenges

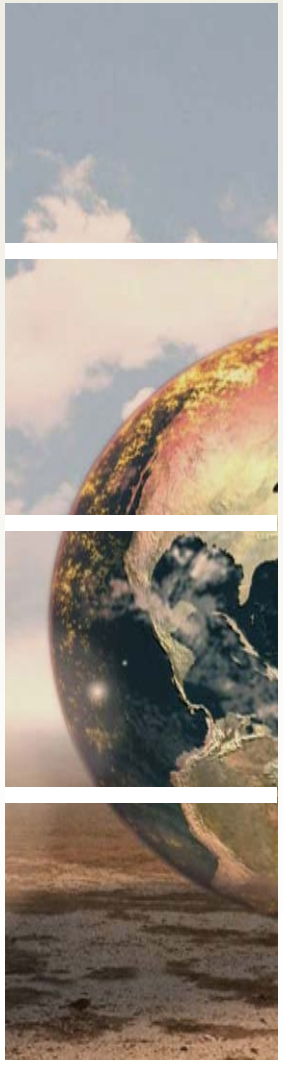
- ➢Compressed schedule – first line production within 1 year of project start
- ➢Timely product/process validation with customers

❑Budget

- ➢$70MM total
- ➢50% Cost-shared

❑Partners

- ➢ITOCHU Corporation
- ➢Argonne National Labs (Li-ion cathode materials license)



Toda Cathode Materials Facility

Project Background

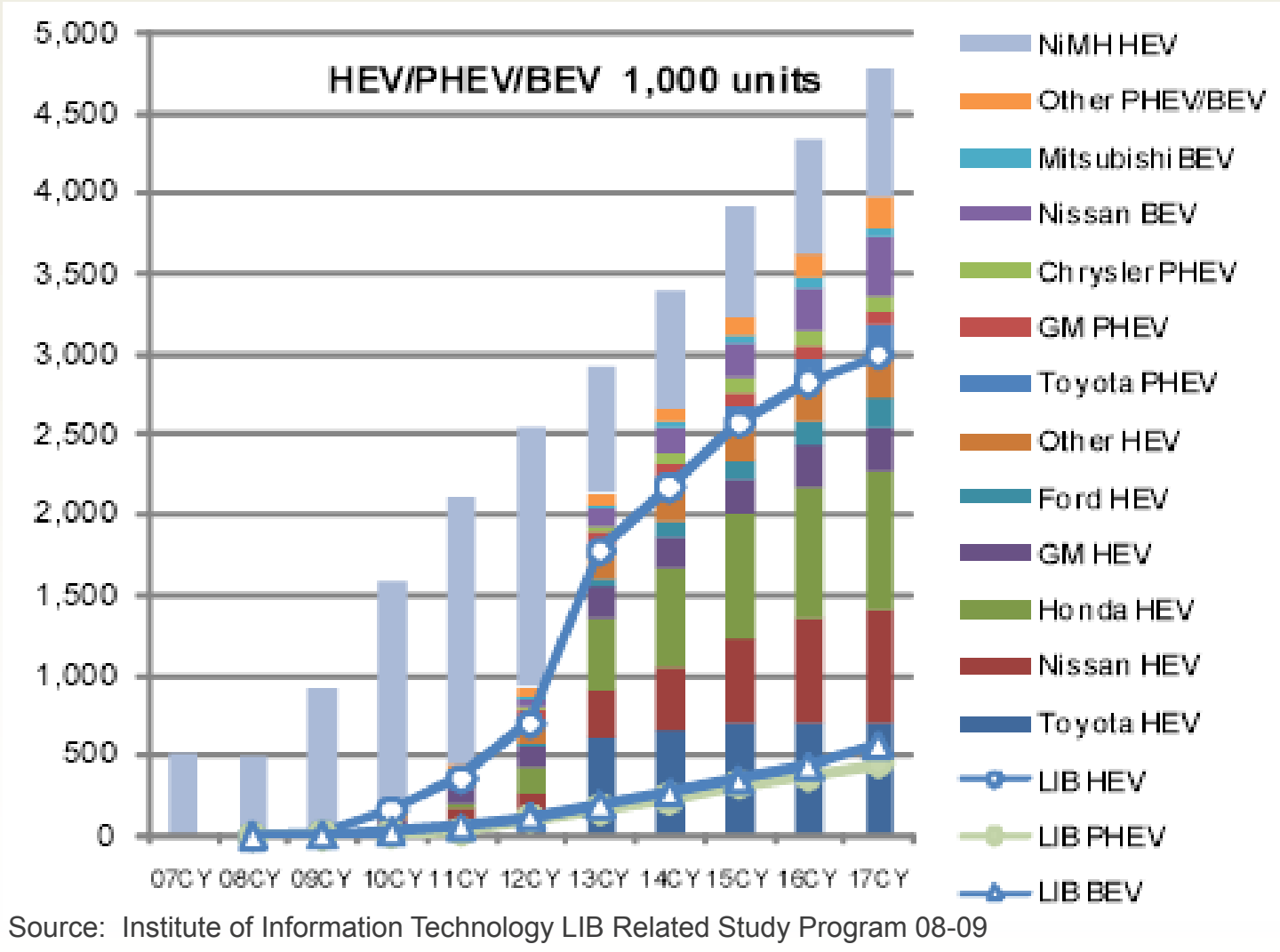
President Obama's Vision:

- One million plug-in hybrid electric vehicles on the road by 2015

ARRA DOE Grant provides $2.4 billion to:

- Accelerate the development and production of EDV systems
- Develop production-ready batteries, power electronics, and electric machines that can be cost-effectively produced

EDV Demand Projections

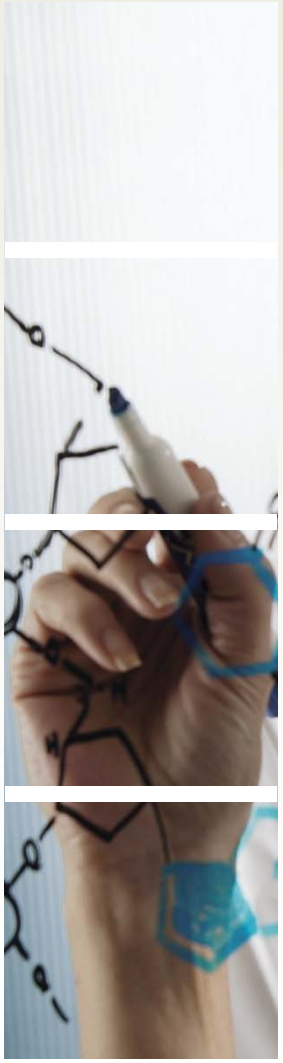


Source: Institute of Information Technology LIB Related Study Program 08-09

Lithium-Ion EDV Batteries

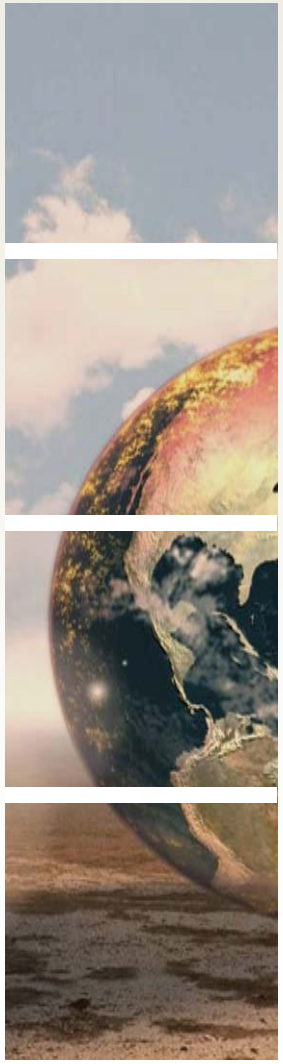
- High energy rechargeable batteries allow vehicles to be powered by electricity
- Lithium-ion batteries are long lasting, safe and are being implemented in current and future EDVs
- Cathode materials are key chemical components of batteries in Li-ion Batteries

➢ Toda is a proven leading producer of Li-ion cathode materials and a strategic supplier for battery customers worldwide



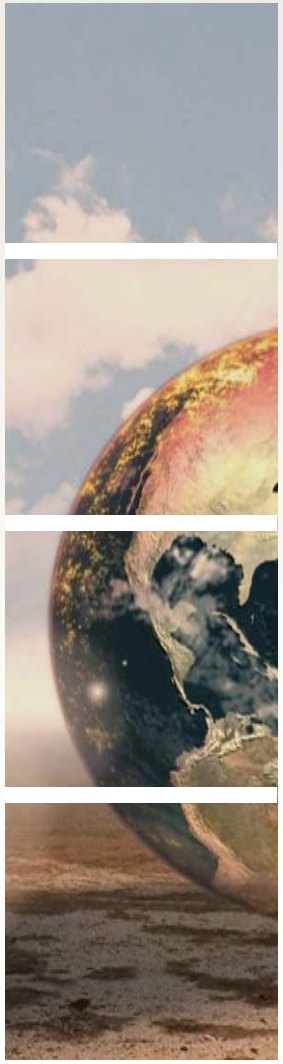
Toda Background

- World's leading manufacturer of Solid State Chemistry Particles with 186 year history
- Broad product breadth of all key cathode materials
- Quality leader with long experience and knowledge of products, processes and application
- Cost leader with large scale production of Li-ion materials and integrated supply chain
- Precursor development and production experience
- Li-ion cathode materials supplied globally to key players in the battery industry
- Will produce DOE Argonne National Laboratory's next-generation cathode material technology



ITOCHU Background

- 50/50 JV partner with Toda in venture
- $120 billion transaction global diversified trading company
- Focused growth strategy (“L-I-N-E-s”)
  - Life & Health, Infrastructure, New Technologies, Energy and Environment, and Synergies
- Core competencies in business management and partnerships, finance, trading and sales
- Complementary to Toda’s strengths in Battery materials R&D and manufacturing



Application of TODA Products

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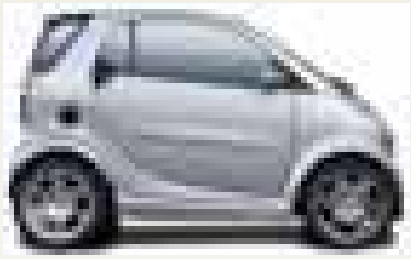
Windpower

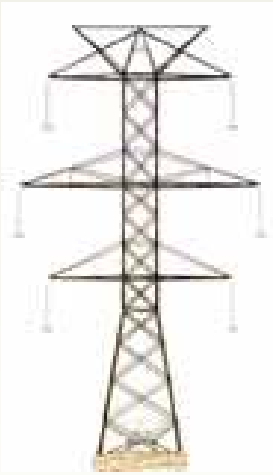
Power Tool

NiMeH Consumer



HEV, PHEV, BEV

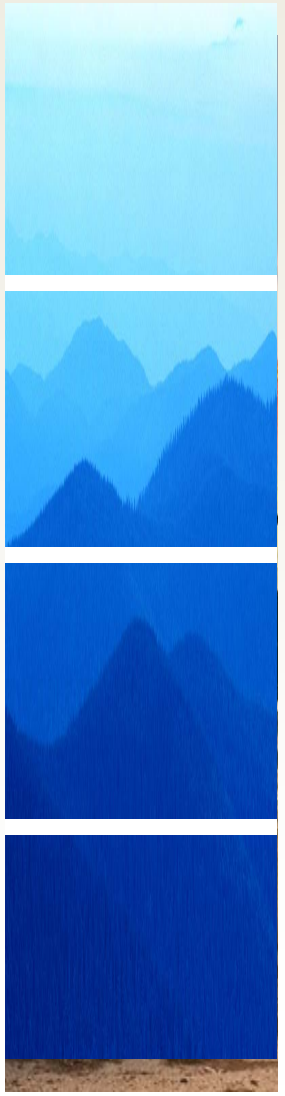
Smart Grid



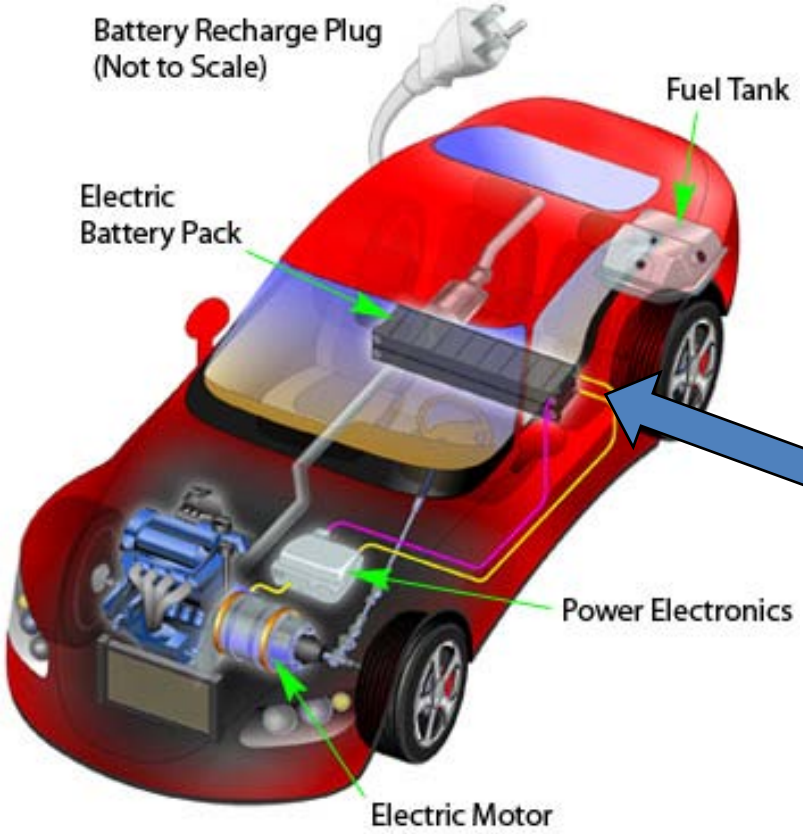
Mobile

$NiM^1M^2(OH)_2$ Precursor
$LiCoO_2$, $LiNiCoAlO_2$

$NiM^1M^2(OH)_2$ Precursor
$LiCoO_2$, $LiNiCoAlO_2$, $LiNiCoMnO_2$, $LiMn_2O_4$



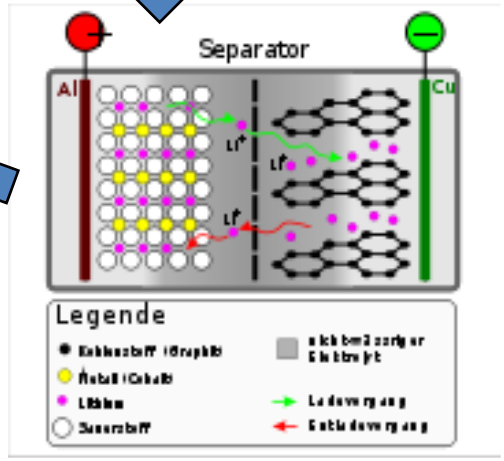
TODA's Cathode Materials for Lithium-Ion battery packs



Plug-In Electric Vehicle

Source: National Renewable Energy Laboratory

TODA
Cathode Materials



Battery

Toda Battery Material Facilities - Project Support Structure

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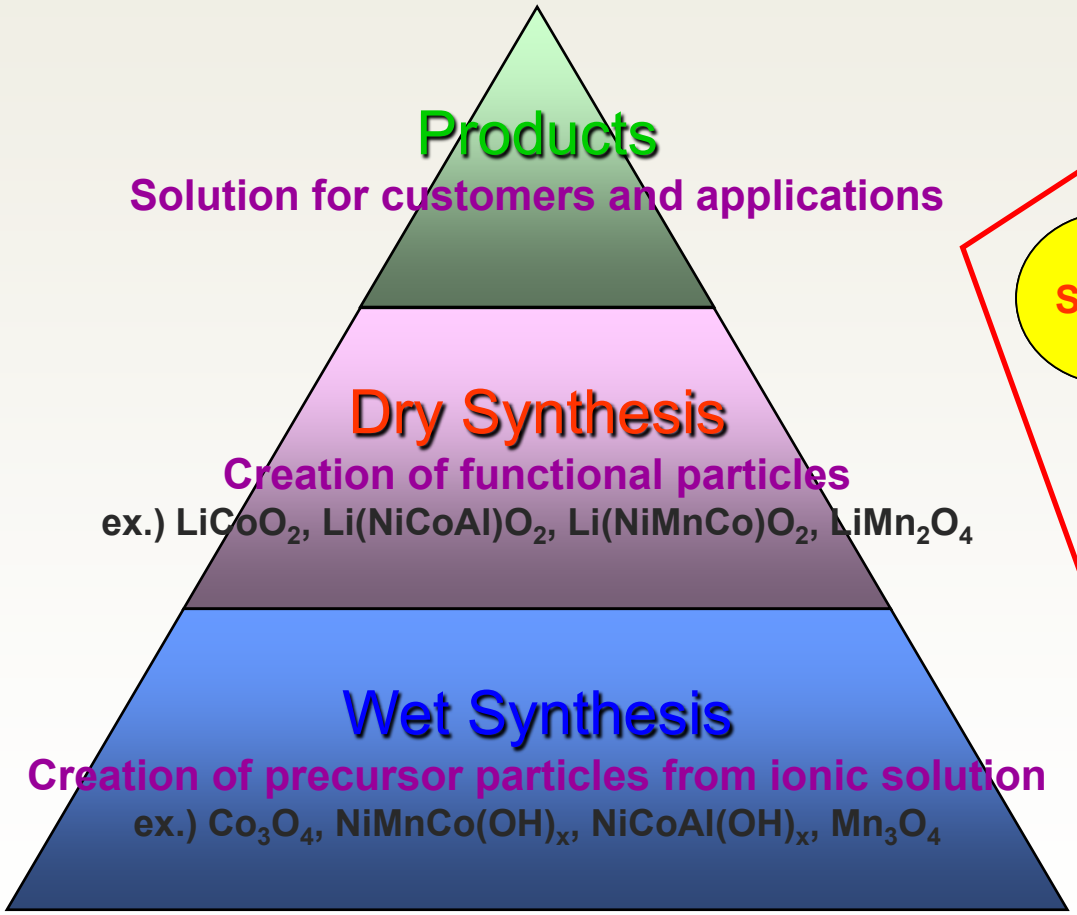
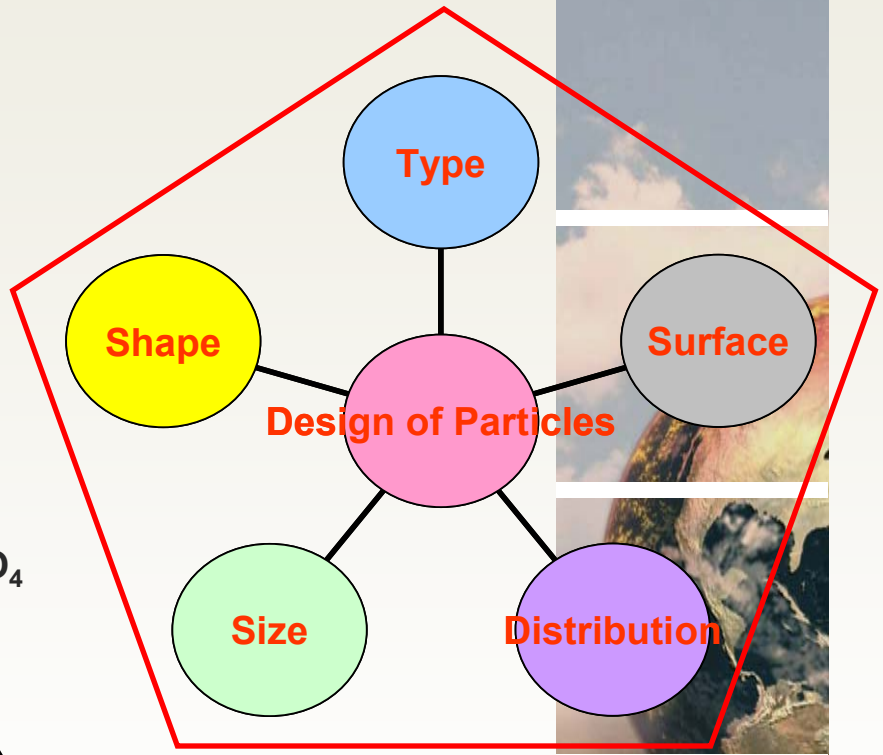
Onoda, Japan

Sarnia, Canada

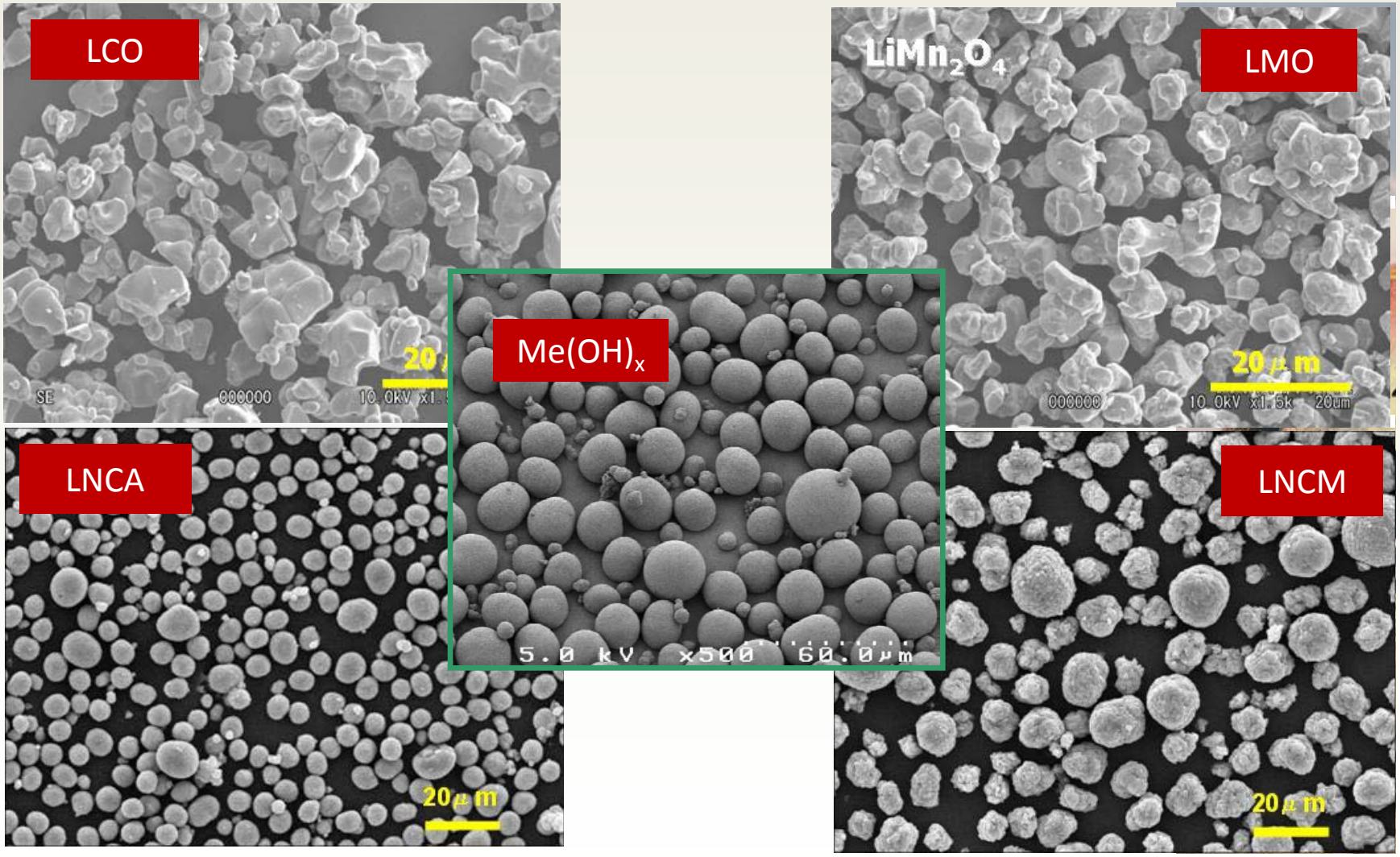
Kitakyushu, Japan – Sister Plant

Integrated Product Development Process





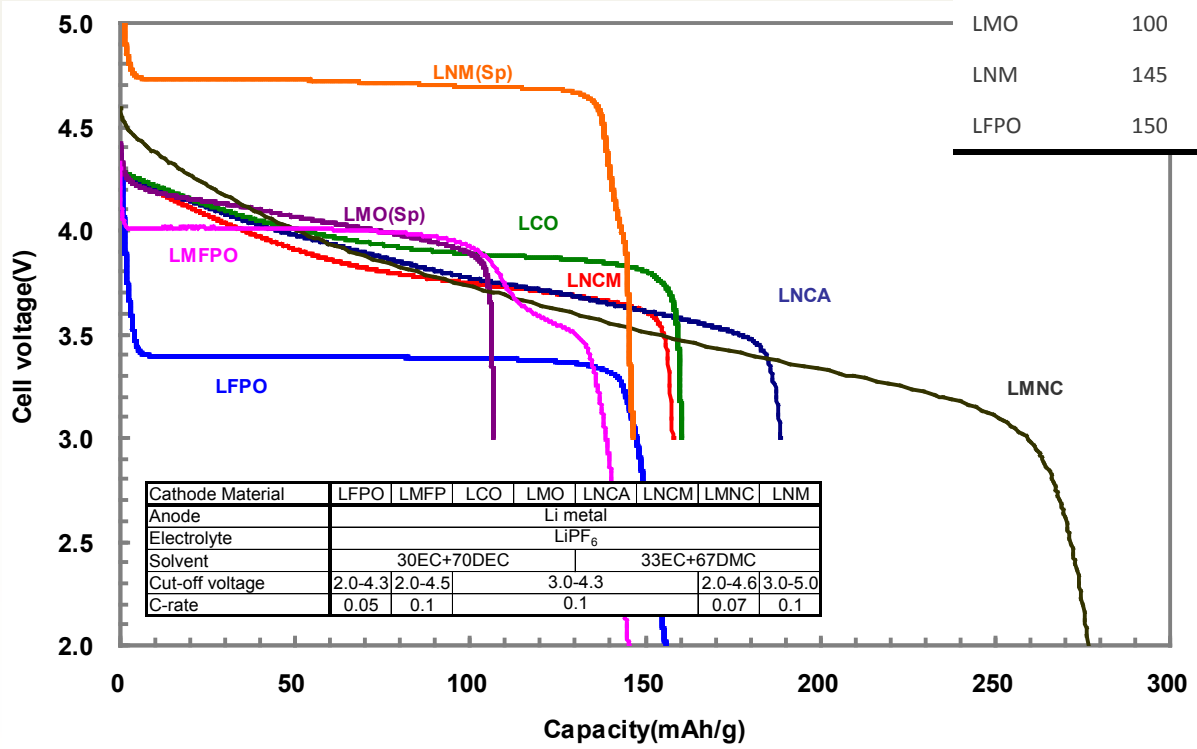
Commercial Products for Cathode Materials

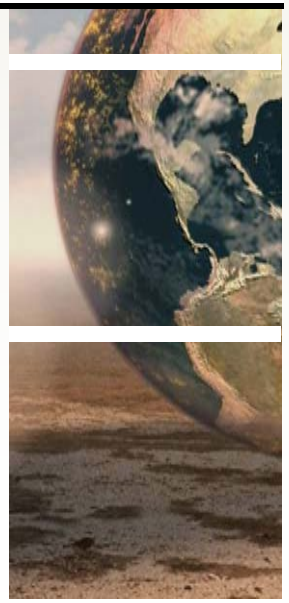


R&D on All Cathode Materials

- LCO, LNCA, Li-rich NCM and LMO currently available commercially by Toda
- LMNC (Li_2MO_3-LMO_2 composite material), LNM(Sp) and Olivine compounds are under development for future market introduction

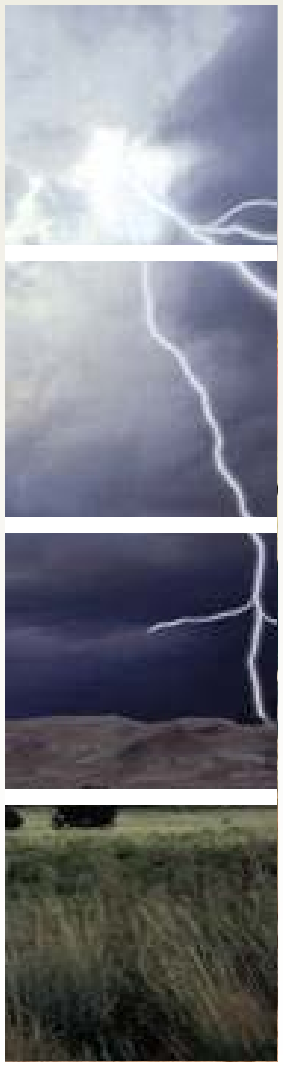
	Capacity (Ah/kg)	Working voltage (V)	Energy Density (Wh/kg)
LMNC	270	3.5	945
LNCM	160	3.7	592
LNCA	200	3.7	740
LCO	160	3.8	608
LMO	100	3.8	380
LNM	145	4.75	690
LFPO	150	3.4	510





Toda U.S. Production Project Highlights

- $70+ Million Total Investment
- 18 acre brownfield site in Fort Custer Industrial Park
- 4000 tons/yr planned production of Lithium- ion cathode materials ($LiNiCoAlO_2$ and $LiNiCoMnO_2$)
  - 450,000 hybrid electric vehicles (HEVs)
  - 125,000 plug-in hybrid electric vehicles (PHEVs)
- First production February 2011 and Full capacity production December 2013
- 57 direct employees at completion
  - Estimated 148 total new jobs created per MEDC
- $130 million annual sales of product at capacity



Toda Battle Creek Site

Project Milestones

TODA AMERICA

Fast-track project on schedule!

Milestone	Status / Target Dates	
DOE Award Announcement	August 2009	Completed
DOE Award Agreement Signing	February 2010	
Site Preparation Completed	March 2010	
Phase 1 Construction Start	April 2010	
Phase 1 – Step 1 Completion	December 2010	
Production Validation Step 1	February 2011	
Phase 1 – Step 2 Completion	September 2011	
Decision for Phase 2 Start	October 2011	
Phase 2 Construction Start	June 2012	
Phase 2 Completion	July 2013	

Site Remediation Completed and Construction Started

Toda Cathode Materials Facility

Summary

1. World leading solid state chemistry company with proven experience in scale manufacturing of Li-ion cathode materials
2. Production of DOE ANL's 2nd generation Li-ion technology
3. Building $70+ million ($35 million DOE cost share) Li-ion Cathode Materials plant with 4000 ton/yr product capacity
4. Battle Creek, MI, 18 acre brownfield redevelopment site
5. Step-wise capacity plan: Phase 1 Step-1 completion February 2011, Step-2 completion December 2011; and Phase 2 full completion December 2013 depending on demand
6. Phase 0 pre-construction preparations completed:
    - Site remediation completed
    - MDNRE liability protection approval obtained
    - DOE NEPA EA "FONSI" certified
7. **Phase 1 construction started on April 1, 2010 on schedule**
8. **Official Groundbreaking ceremony held on April 20, 2010**