ESS Annual Review 2010

Mohit Singh, VP R&D and Engineering

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Introduction to Seeo

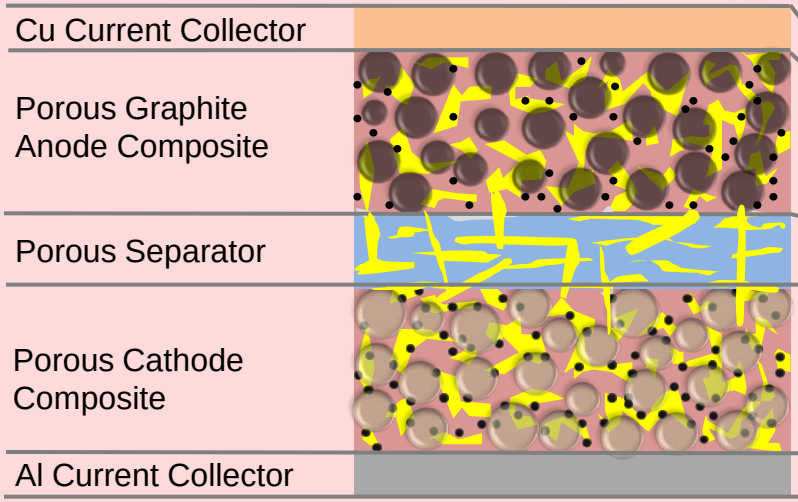
khosla ventures
venture assistance, strategic advice, venture capital

Google

U.S. DEPARTMENT OF
ENERGY

Seeo's solid polymer battery

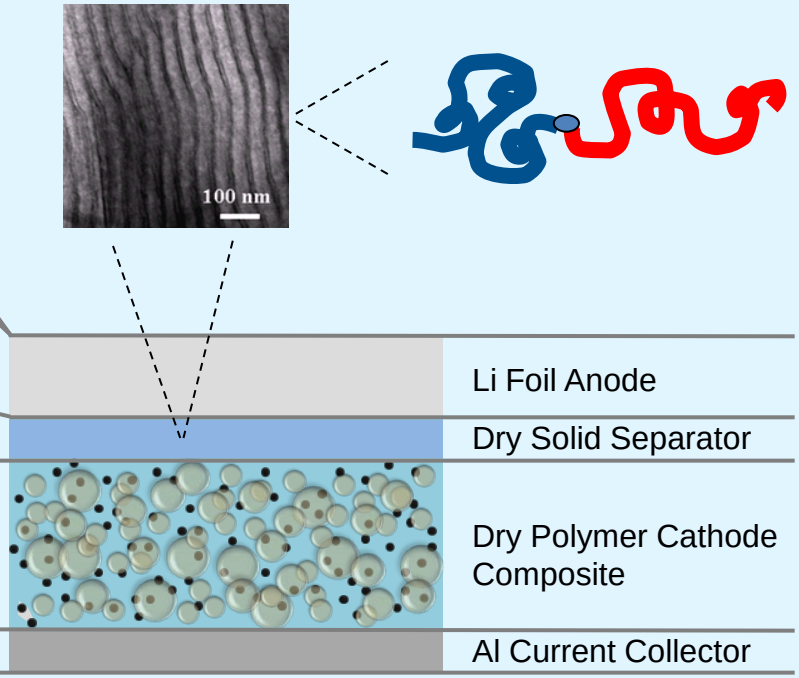
Conventional Li Ion Battery



Liquid electrolyte inherently reactive

Capacity fade and thermal runaway

Seeo's Battery

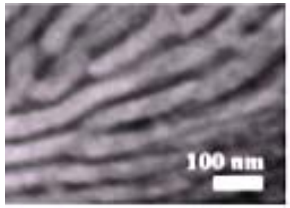


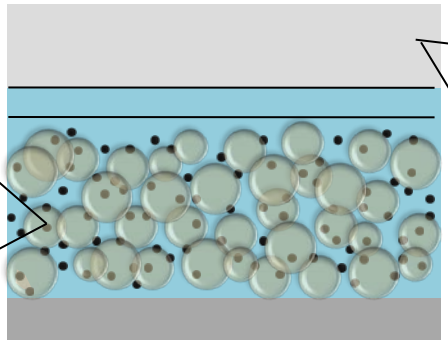
Non-reactive and non-flammable

Solid state for min. capacity fade

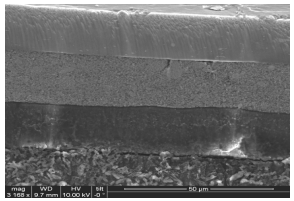
The Seeo battery

Nanocomposite Electrolyte





Li Foil Electrode

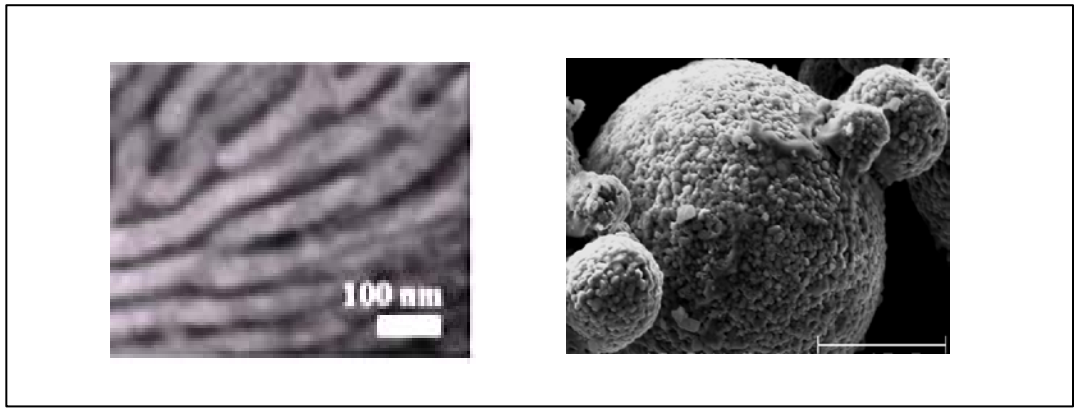


Non-reactive, Non-flammable

10X capacity vs. graphitic anode

High Energy	→ 1-4 Hour Apps w/ Lowest Footprint/Weight
Low Cost	→ 60% raw materials per kWh vs. lithium ion
Long Life	→ 15 years, thousands of 100% DOD cycles
High Temp	→ Full lifetime up to 100 ºC, No A/C needed
Safe	→ No volatile or flammable components

$12.4M DOE Smartgrid Grant Supports Demo



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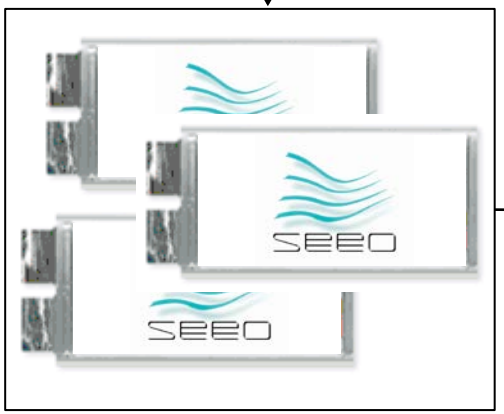
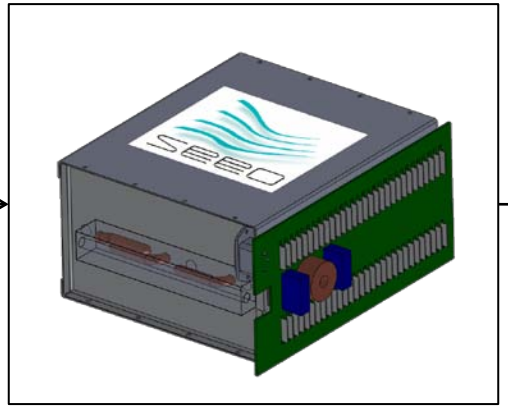
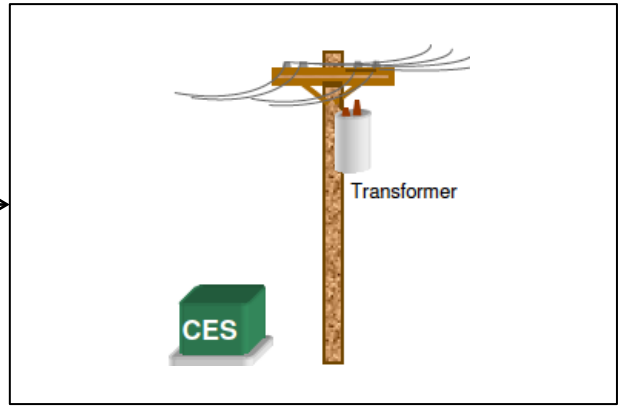
Nanocomposite Electrolyte Technology



Cells



Sub-modules



25 kWh CES System

Manufacturability of Seeo cells

(video)

Seeo electrolyte patch coated over cathode parts

Key additions to project team

- Steve Liu, President & CEO
- Ken Damon, Director of Manufacturing
- 1 PhD researcher with Prof. Dan Kammen, UCB
- 2 cell technicians hired & trained
- 1 facilities manager for the pilot line hired

Technical progress to date

	Key Achievements	Next steps
Polymer optimization	• Better mechanical properties at high temperatures	• Conductivity optimization
Materials scale-up	• 1st run 10 kg toll manufacturing completed	• Simplified synthetic method
Cell scale-up	• Cell area scaled 10x with no performance loss	• Safety testing on large capacity cells
Pack design	• Module design iteration completed	• Module prototyping

Q&A