



“Reshaping Portable Power”

**10th Annual Nanobusiness/
Nanomanufacturing Summit**

September 27, 2011

Overview of Contour Energy Systems, Inc



Azusa, California
Headquarters, Corporate R&D and coin-cell manufacturing

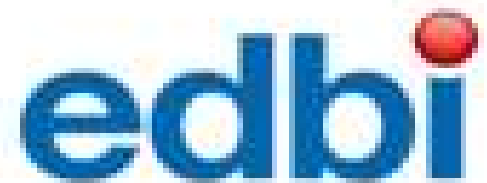
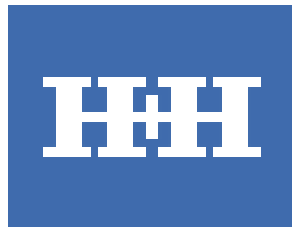


Yuma, Arizona
Electrode powder manufacturing

- **Spinout from Caltech with focus on Advanced Primary and Rechargeable Batteries**
- **Founded in June, 2007**
- **Two facilities:**
 - Azusa, CA: HQ, cell manufacturing and R&D
 - Yuma, AZ: Electrode manufacturing
- **Raised \$50M (Series A, B and C)**
 - CMEA, USVP, Harris and Harris, Schlumberger, and EDBI
- **Growing rapidly**
 - 42 employees (up from 17 a year ago)
 - Doubled manufacturing and R&D space
- **First Products**
 - Coin cell for 3D glasses
 - Developing World's Longest Lasting D cell and 9 Volt battery



Blue Chip Technology Partners and Investors



Contour's World Class Founders and Management

Founders

Dr. Robert Grubbs **Founder and Director**

- 2005 Nobel Laureate
- Professor of Chem., Caltech
- Founder of several successful high tech companies

Dr. Andre Hamwi **Founder**

- Professor at Univ Blaise-Pascal
- 30+ years electrochemistry experience
- World-renowned expert in fluorine chemistry

Management

T. Joseph Fisher **CEO**

- 30+ years battery experience
- Extensive domestic and international management experience with Energizer

Dr. L.C. Chiu **COO**

- 25+ years experience in operations and scaling manufacturing
- Former HP executive as well as a successful start up sold to JDS Uniphase

Dr. Simon Jones **VP, Technology**

- 10+ years R&D experience
- 30+ publications in emerging technologies (electrochemistry, electrolytes, nanotechnology)

Joe Carcone **VP, Sales and Marketing**

- 30+ years battery experience
- Proven track record with Sanyo, General Electric and Powergenix

Lee Sailor **VP, Finance**

- 20 years financial + operations experience
- Proven executive with start up and mid size cos.

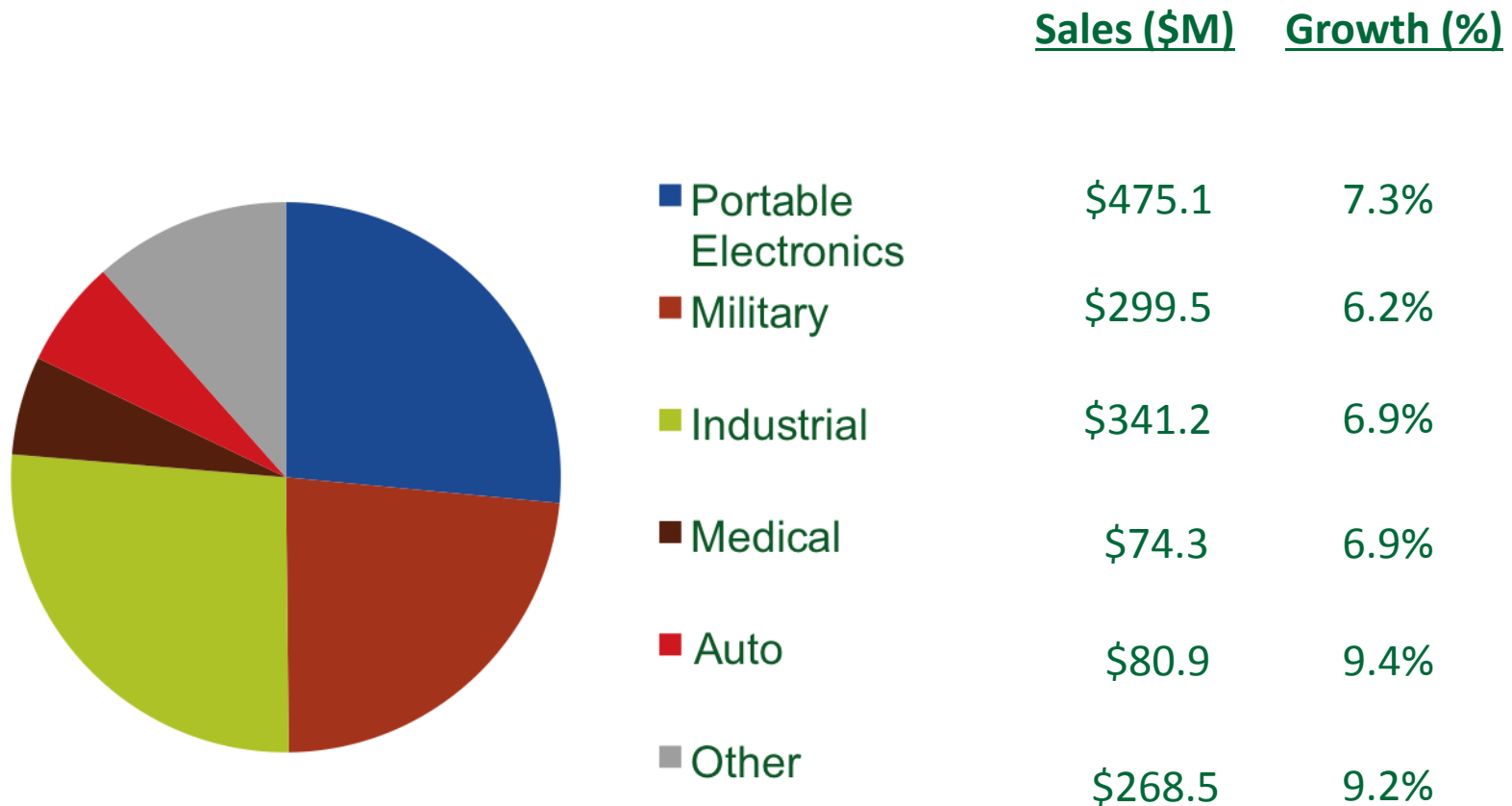
Key Facts

- **Successfully transitioning from a small start up to a fast moving, results oriented advanced technology and manufacturing company.....**
 - **Currently 42 employees, up from 17 one year ago**
 - **Five (5) Joint Development Agreements with 2 Global Strategics, leading to sales in 2012 and ramping up significantly in 2013**
 - **43 patents and pending patent applications**
 - **Doubled Manufacturing and Lab space in last 6 months.**

Key Technology Portfolio Strategies

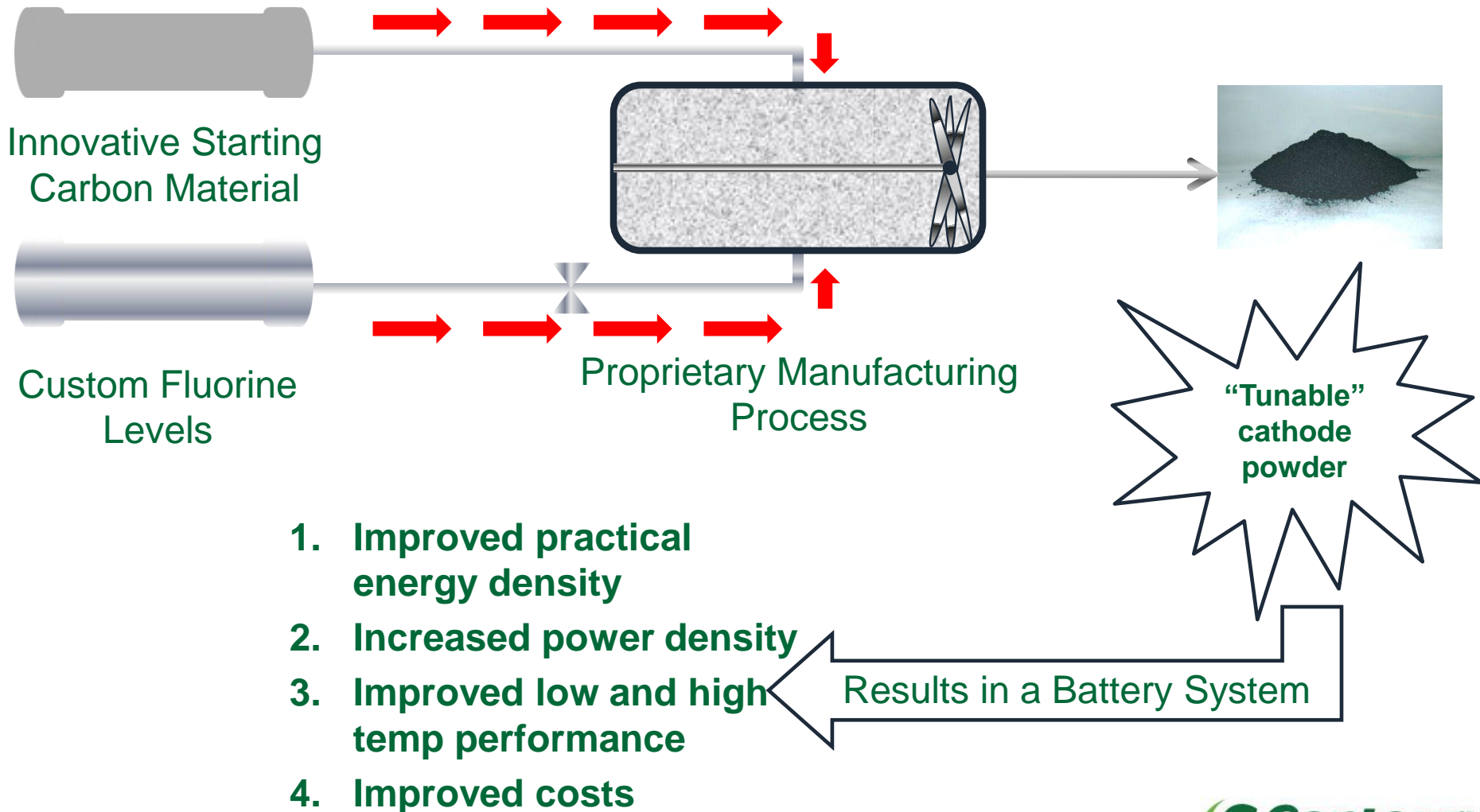
- **Develop and Commercialize our Proprietary Lithium CFX_{tm} Primary Batteries**
- **Develop and Commercialize our Next Generation Proprietary Rechargeable Batteries**

Contour's Primary Products Address a \$1.5B Lithium Primary Market



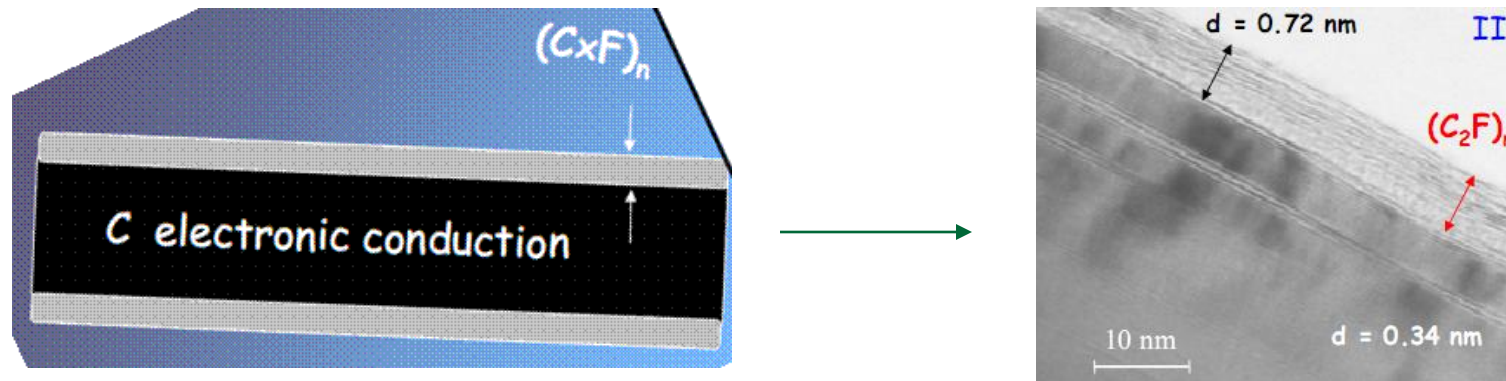
Source: Frost & Sullivan and CFX Estimates

Contour Energy's Fluorine Based Systems Deliver Superior Results Across the Board

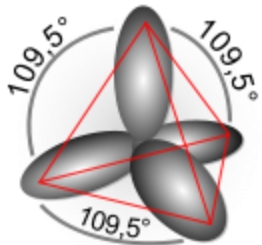


Contour's Innovations Combine Nanomaterials with Proprietary Fluorination Conditions

- Carbon nanotubes and nanofibers with core-shell structures

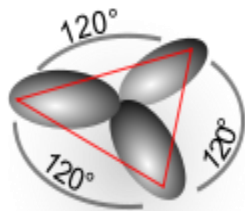


- Graphitic materials with sp^2 -nanodomains



sp^3

VS

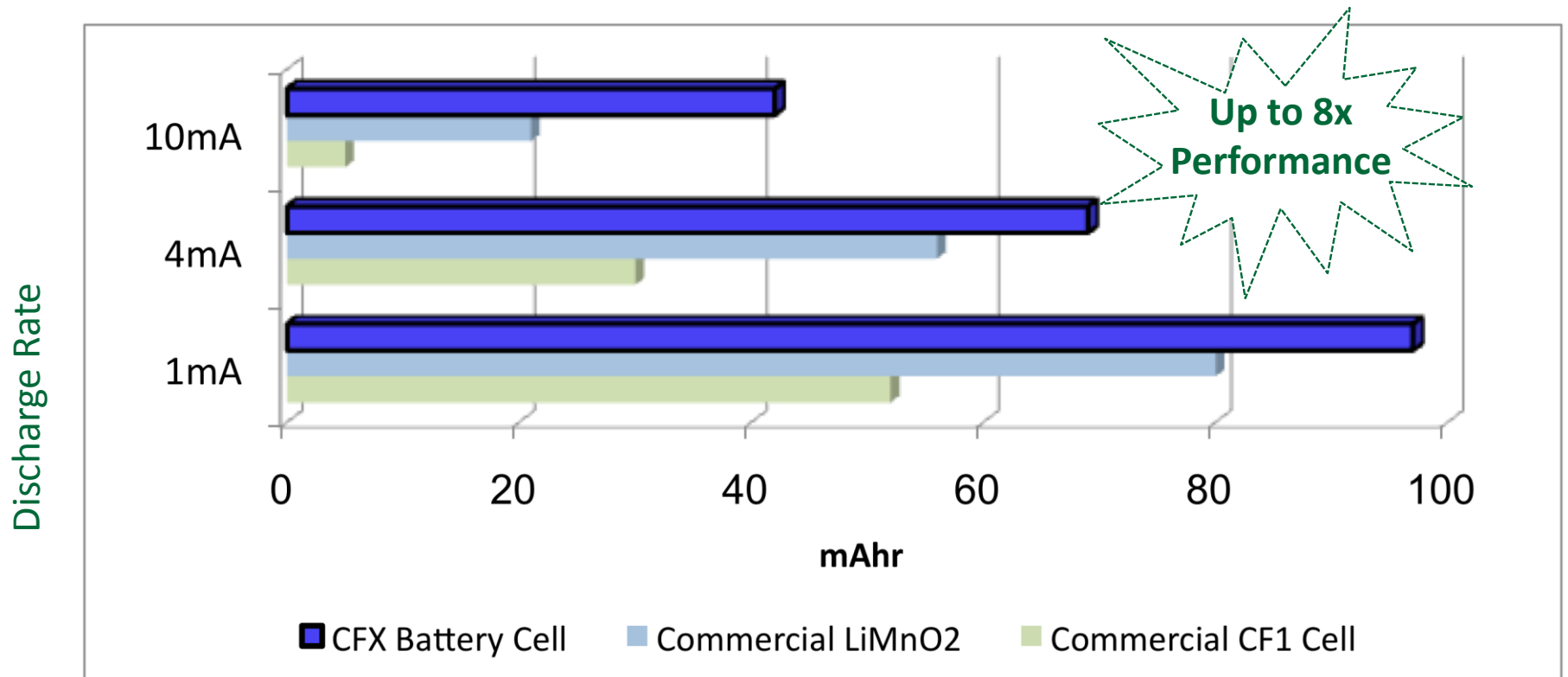


sp^2

sp^2 = weaker C-F bond, more conductive

Weaker C-F Bond + More Conductive = Higher Power

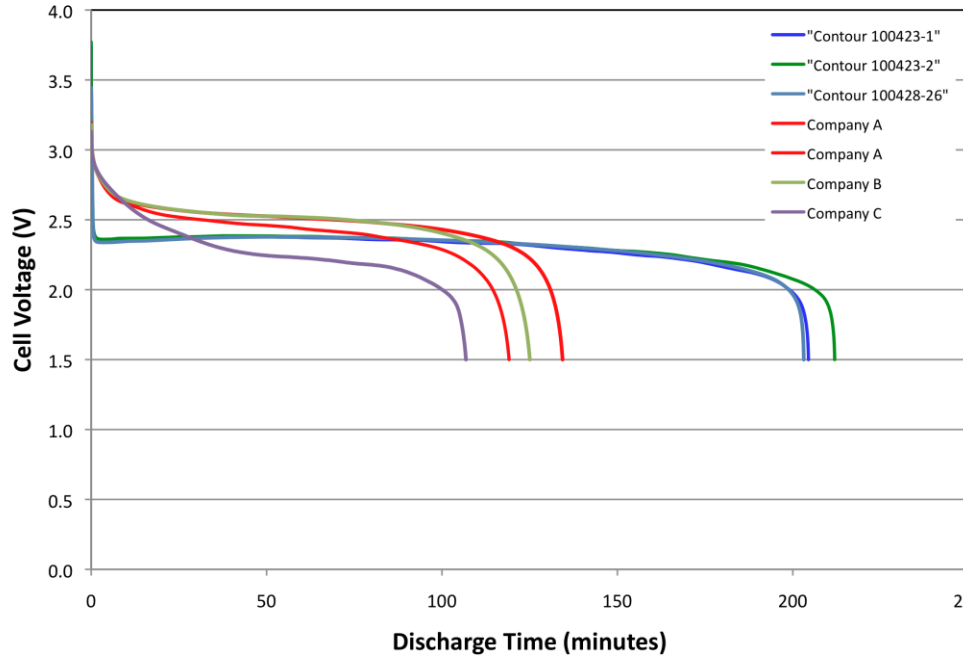
Contour's Technology Demonstrates Superior Performance Across Various Discharge Rates



Tested on 2016 coin cell to 2V

Contour Energy's Fluorine Based Systems Deliver Superior Results Across the Board: Power

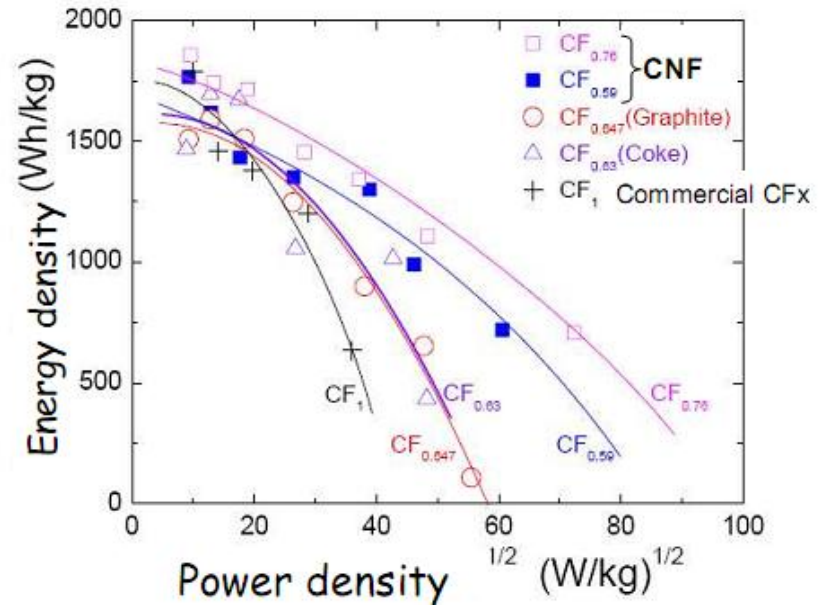
Constant Power 30mW Discharge Curves



Comparison with
nanofibers



← Powder material
(independent testing)



Engaged with multiple OEMs and Organizations



Why *Contour* Fluorinetic™ Primaries ???

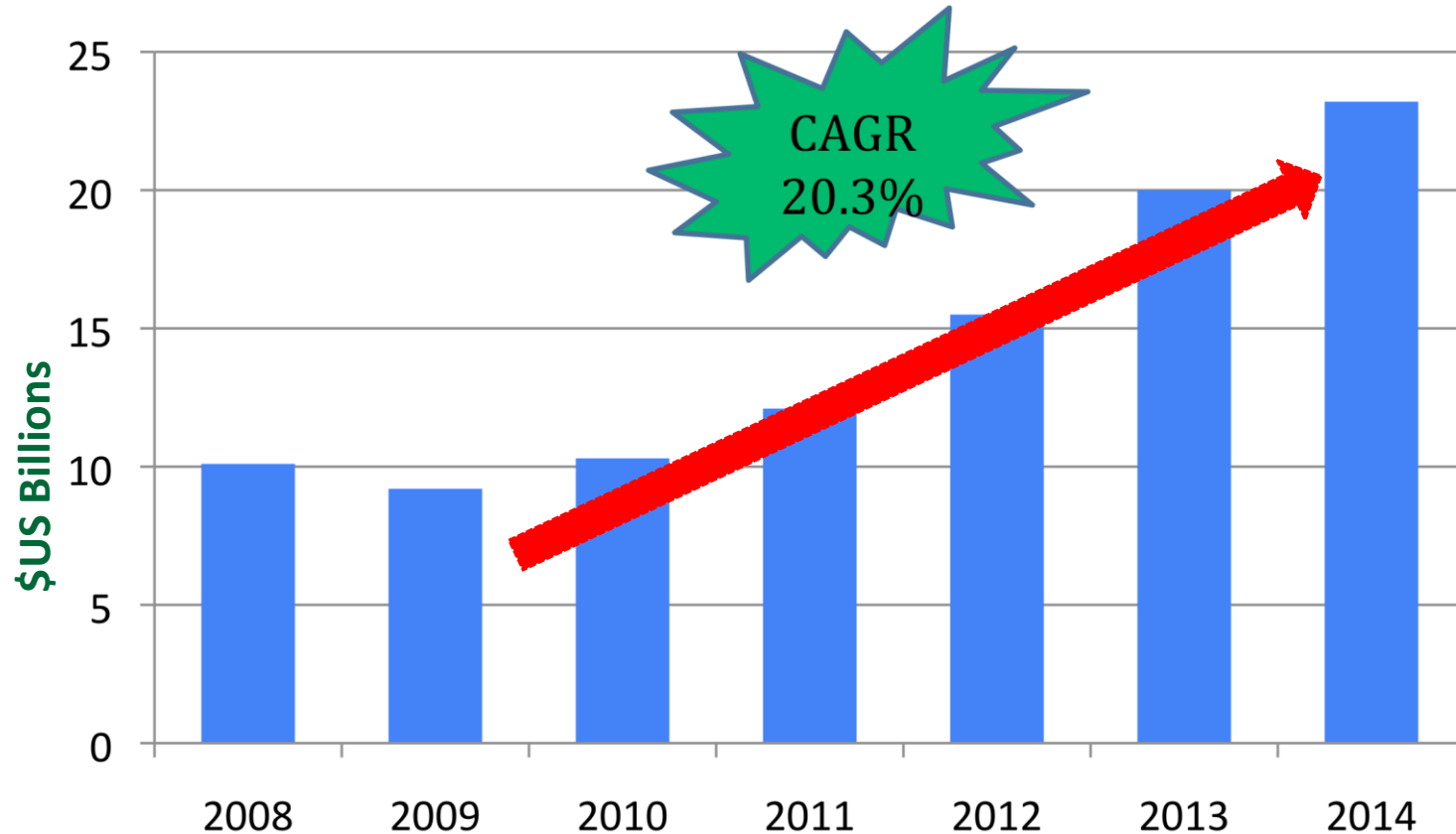
- Superior Runtime - Up to 8X Longer vs. existing products
- Superior Rate Capability – Due to Proprietary Cathode
- Superior Temperature Performance - -60C to 220C
- Superior Shelf Life – Up to 15 Years
- Environmentally Friendly - No heavy metals or toxic elements

Sales Ramp to \$35mm by end of 2013 growing to over \$100mm by 2015.

Key Technology Portfolio Strategies

- Develop and Commercialize Lithium CFx Primary Batteries
- **Develop and Commercialize Next Generation Rechargeable Batteries**

The Rechargeable Lithium market is large, with upside of the auto & smart grid



Source: ITT, March 2010

Our Next Generation Rechargeable Batteries

Contour is working on all the key battery components

- **Advanced Lithium Ion Batteries**

- Novel Anodes – Carbon Fiber Composites, Silicon
- Novel Cathodes – Both Energy and Power
- Novel Electrolytes – Liquid, Solid State and Ionic
- Novel Separators – Improved safety, performance and lower cost

Our Next Generation Rechargeable Batteries

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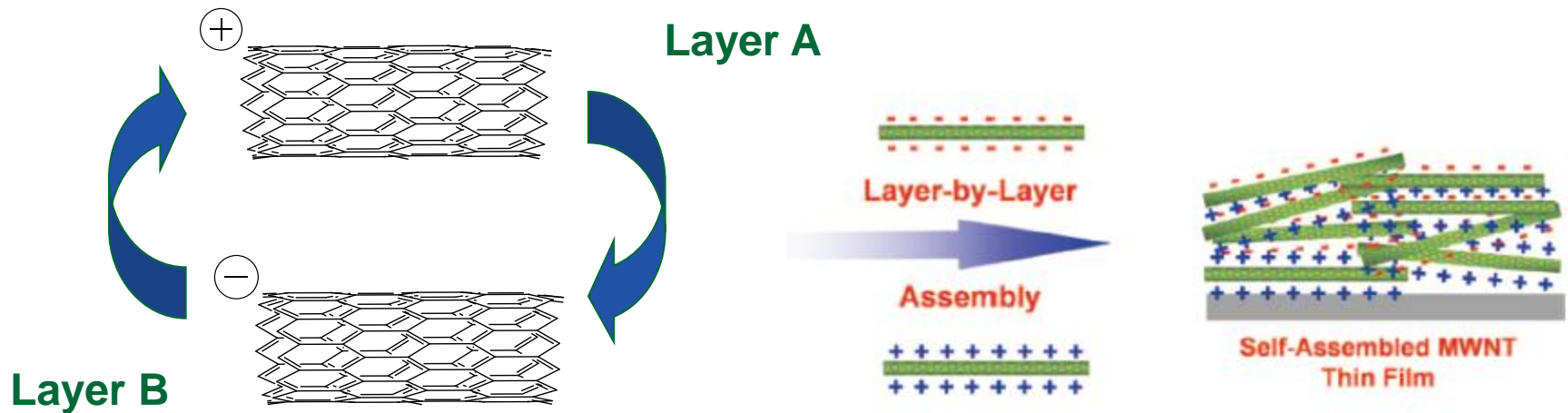
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- Novel Anodes – Carbon Fiber Composites, Silicon
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**We will focus this am on our
exclusively licensed MIT
“High Power Cathode”**

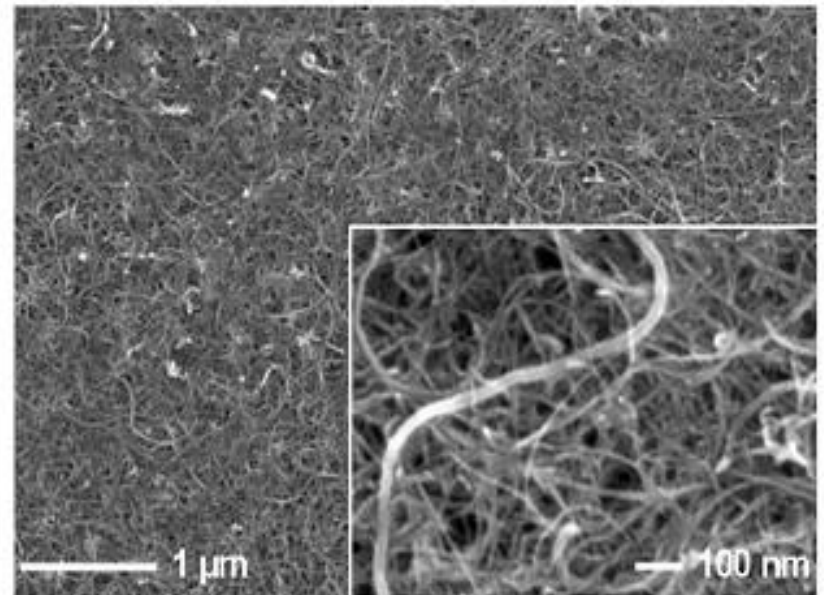
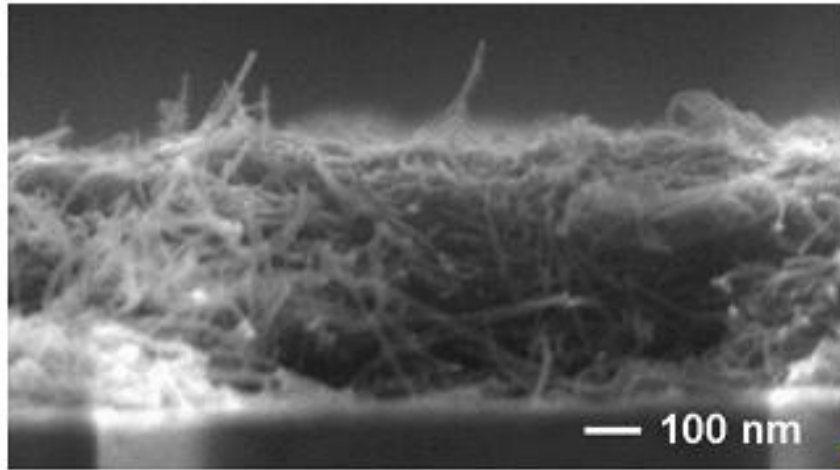


Layer-by-Layer Nanotechnology for High-Power Rechargeable Batteries

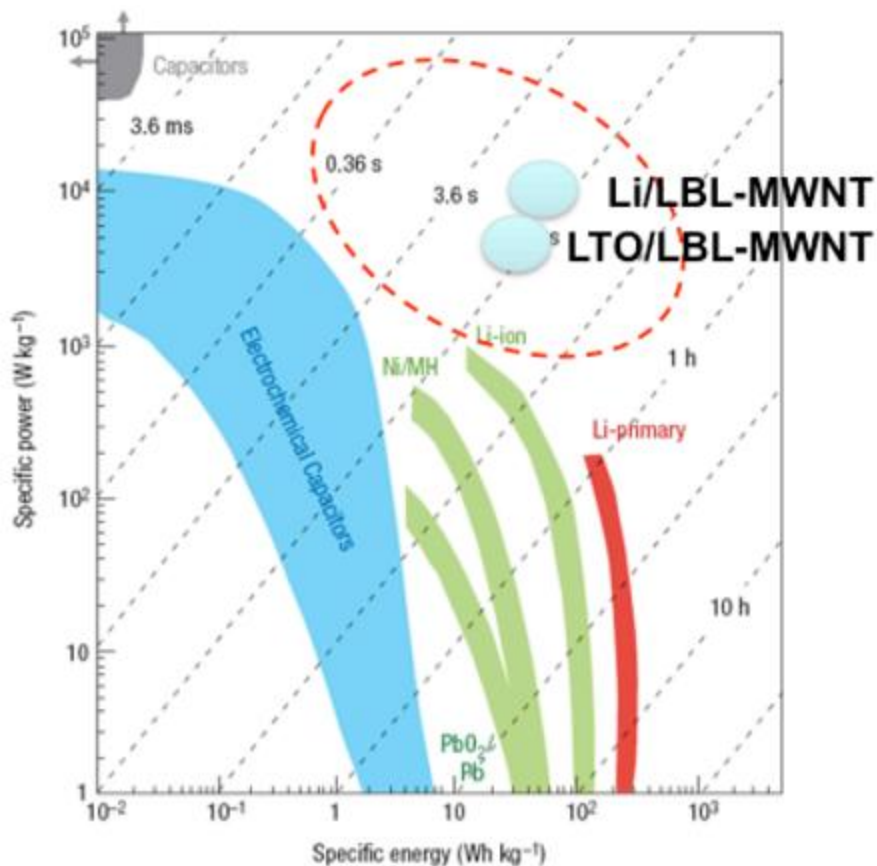


S. W. Lee, B.-S. Kim, S. Chen, Y. Shao-Horn and P. T. Hammond, *J. Am. Chem. Soc.*, **2009**, *131*, 671

Rapid Generation of Dense Nanotube Array



Advantages Of LbL Hybrid Cells



Nanotube Electrode Combines High Energy of a Battery with High Power of a Capacitor

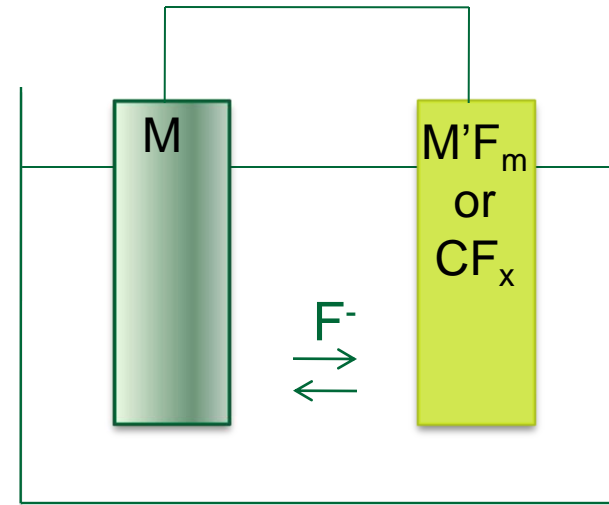
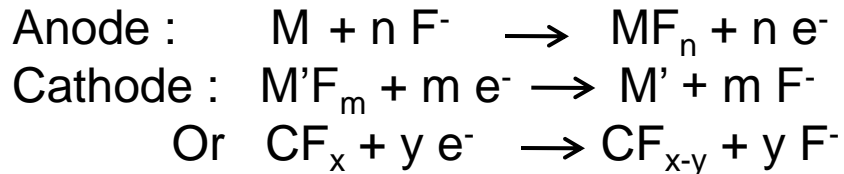
- **Higher Packaged Gravimetric Energy Densities At Higher Gravimetric Power Relative To Li-ion Batteries**
- **Much Higher Gravimetric Energy Densities At Comparable Gravimetric Power To Electrochemical Capacitors**
- **No Binder Or Additives**
 - **All electrode material is active**
- **Excellent Cycle Life**
 - **Stable surface redox reactions**
- **Applicable To Many Substrates**
 - **Flexible, conformal electrodes**
 - **Thin-film cells**
 - **Larger cells under development**
 - **CFx Primary and Advanced Rechargeable**

Our Next Generation Rechargeable Batteries

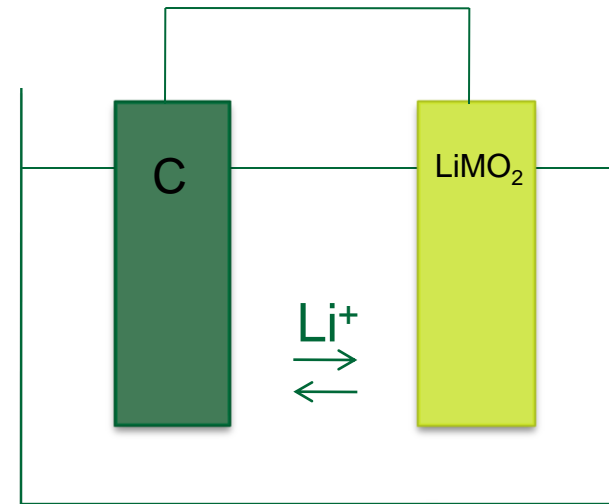
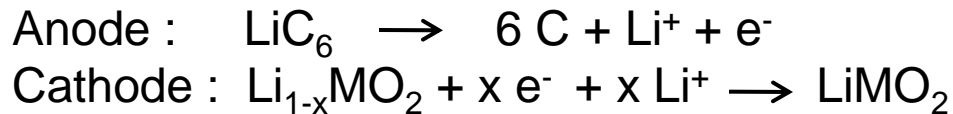
- **Advanced Lithium Ion Batteries**
 - Novel Anodes – Carbon Fiber Composites, Silicon
 - Novel Cathodes – Both Energy and Power
 - Novel Electrolytes – Liquid, Solid State and Ionic
 - Novel Separators – Improved safety, performance and lower cost
- **Next Generation Rechargeable Batteries**
 - Improved Safety – No Lithium
 - Higher Voltage and Broader Temperature Range
 - Superior Performance – Gravimetric and Volumetric

Contour has identified a new, lithium-free high energy storage device

FIB Concept:

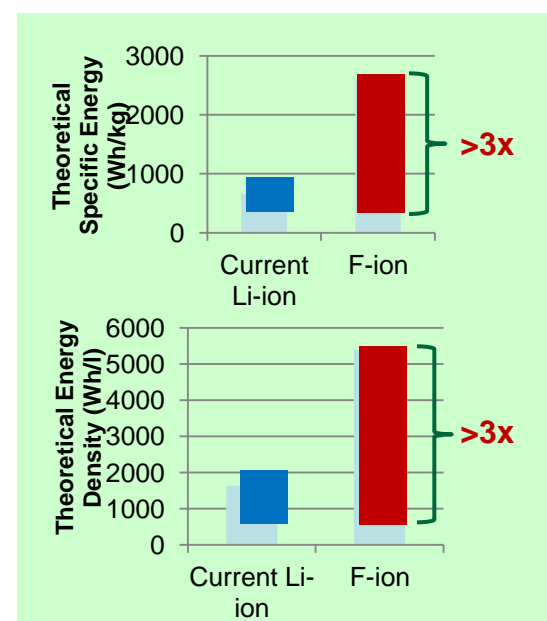


Related to LIB concept:



Potential Advantages of Fluoride-Based Redox Systems

- **Fluorine is highly electronegative**
 - Large ΔG between redox states e.g. MF_3/MF
- **Redox processes can be multi-electron, metal-based**
 - Increases energy density of system, monovalent anion migration
- **Fluoride is “smallest” anion (130 pm) [$\sim K^+$]**
 - Good mobility, smaller reorganization energy
- **Impressive theoretical gravimetric and volumetric capacities**
 - Up to 2600 Wh/kg, 5000 Wh/L
- **Utilizes abundant, cheap materials**
 - No heavy metals



Why *Contour* Advanced Rechargeables ???

First, our new MIT Power Cathode will be ready for launch in 2013 featuring....

- Up to **10X more power** than existing cathodes
 - Ideal for Hybrid Electric Vehicles, PHEV's, Medical Devices and Power Tools

Then in 2014, we commercialize our “Lithium Free” Fluorion™ Rechargeables which have....

- 3X Theoretical Specific and Gravimetric Energy Densities of Lithium Ion Batteries
- No Lithium
- Higher Voltage

Conclusion – Why Contour? Why Now?

- A “Hot” sector with huge markets and upside growth
- Game Changing, Disruptive, Next Generation Battery Technologies with Strong IP and Trade secrets
- Strong and Committed Partners
- Experienced and Proven Management Team
- Track record of hitting milestones

***Contour* - RESHAPING the World of Portable Power !!!**

Thank You..... Questions????

- For more information, contact Joe Fisher at...

joe.fisher@contourenenergy.com or (626) 610-0660

- Or go to our web at:
- www.contourenenergy.com