



SKYnano TECHNOLOGIES

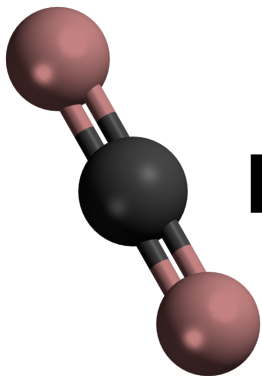
economical carbon nanotubes through
environmentally sustainable manufacturing

Anna Douglas
Cary Pint

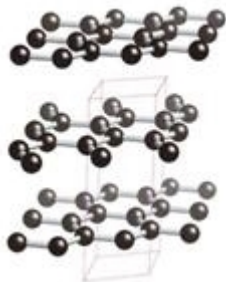
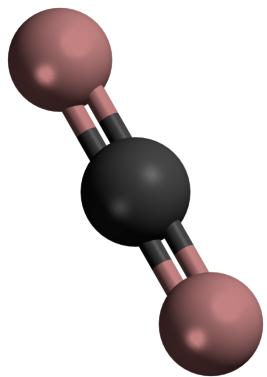




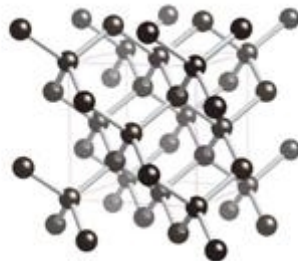
WHAT IF...



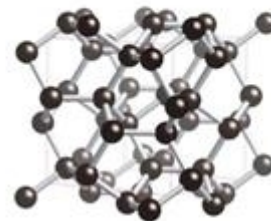
SKYNANO: BUILDING THE BUILDING BLOCKS



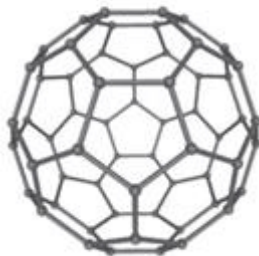
graphite



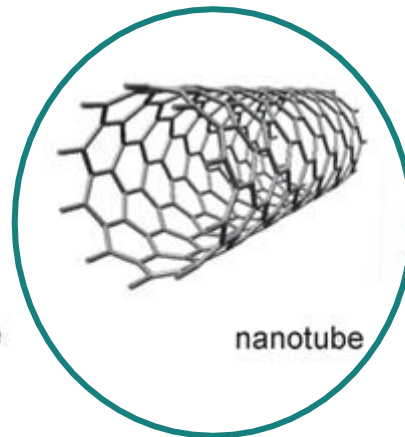
diamond



BC8



fullerene



nanotube



graphene



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CURRENT CNT BOTTLENECK: MANUFACTURING COST



Scalability barriers



Energy-intensive



Limits applications

NOVEL ELECTROCHEMICAL MANUFACTURING



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Secret Sauce

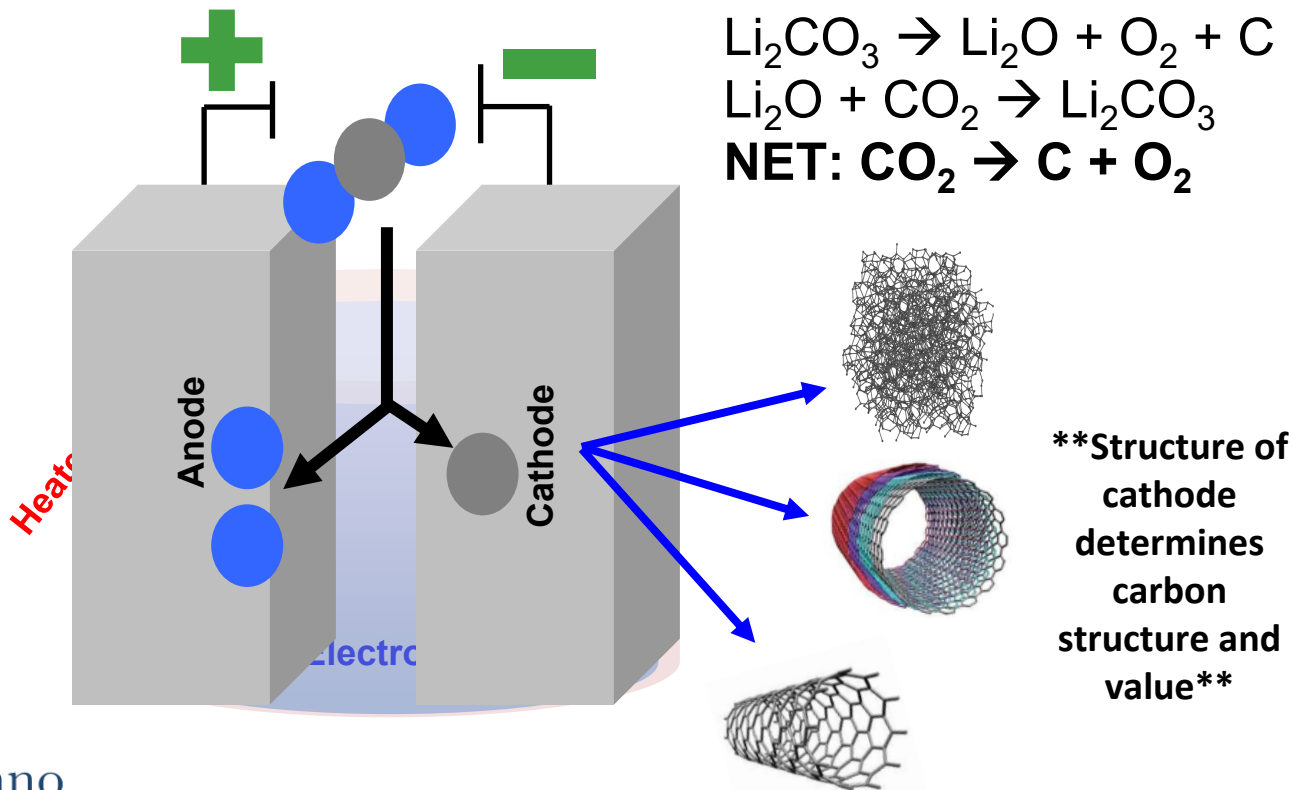
- CO₂ captured/converted from air as chemical feedstock
- Open system facilitates scaling
- Harnesses the **precision** of electrochemistry

Unparalleled Energy Efficiency

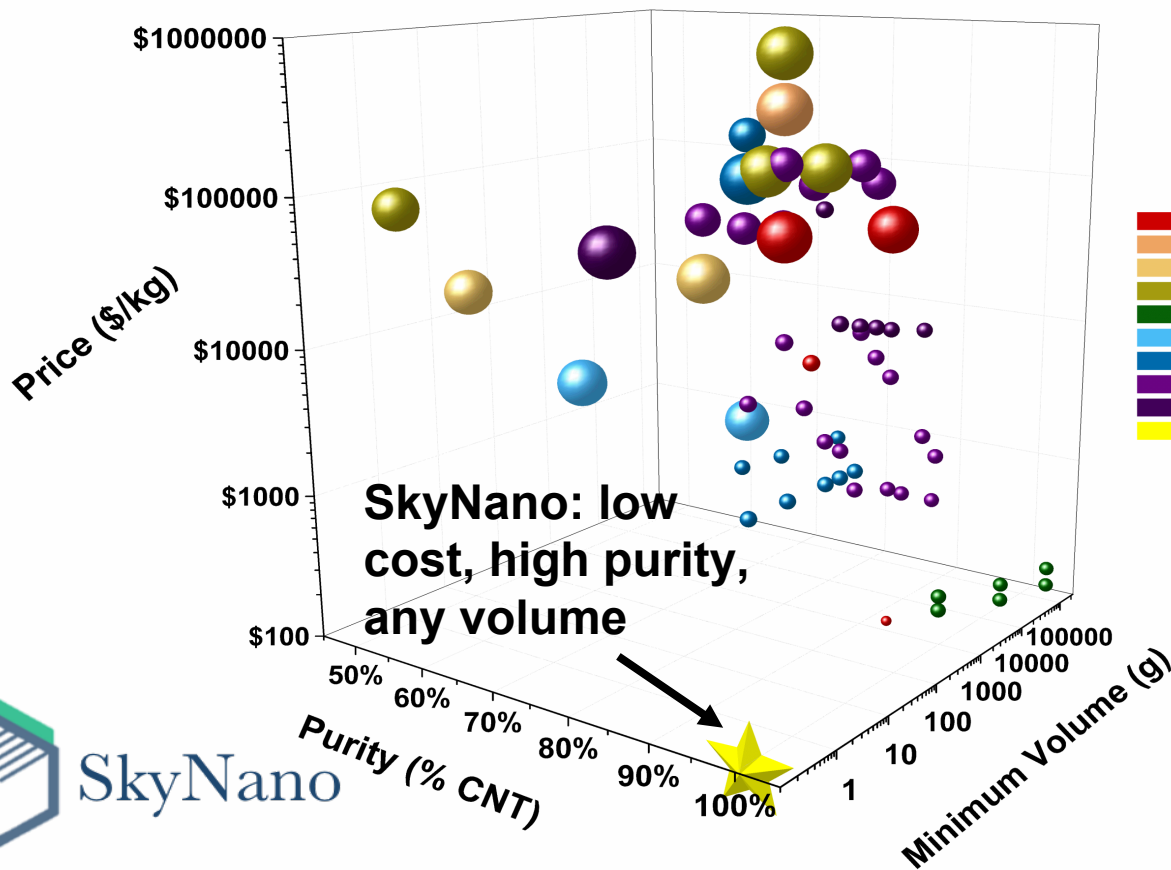
No wasted feedstock

Sustainable

THE REACTION



COMPETITIVE LANDSCAPE



- Suppliers**
- Thomas Swan
 - Chasm
 - Klean Commodities
 - Nano-C
 - CNano
 - OCSiAl
 - Nano-Lab
 - CheapTubes
 - NanoIntegris Raymor
 - SkyNano

Big spheres = small diameter CNTs
Small spheres = large diameter CNTs



PRODUCT OPPORTUNITY



faster
charging
batteries

tires that
last longer +
save fuel



cheap & efficient
transparent
conductive films

coatings and
composites
with enhanced
functionality



MARKET OPPORTUNITY



**Current CNT
Market:
\$671M**
(aerospace +
specialty
applications)

Adapters

\$2.8B

*1-5 years to
capture this
market*

Deicing
EMI Shielding

Adopters

\$3.9B

*3-8 years to capture
this market*

Battery Additives
Elastomer Additives

Converters

\$102B+

*8+ years to capture
this market*

Transparent Conductors
Filtration Membranes
Wires
Sensors
Concrete Additives
Coatings
Smart Textiles
+ MORE!

Immediate
Opportunity



SkyNano

THE TEAM



Anna Douglas

The Strategist

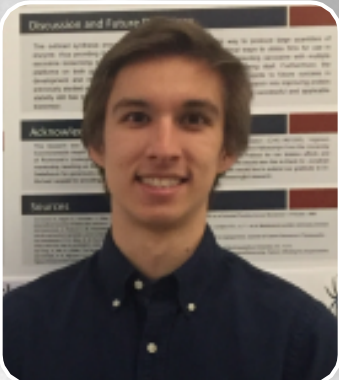
- *En Route* to Ph.D. in Materials Science @ Vanderbilt
- >6 years experience in nanotechnology
- Expertise: nanomaterials synthesis, electrochemistry



Cary Pint

The “Iron Chef” of CNTs

- Ph.D. Applied Physics, Rice Univ., 2010
- Professor of Mechanical Engineering @ Vanderbilt
- >13 years experience in CNTs
- World Leader in Carbon Nanotechnology & Energy Tech



Michael Pannell

Technician Extraordinaire

- BS Chemistry/Economics, University of Richmond
- Expertise: carbon nanomaterials, technology economics

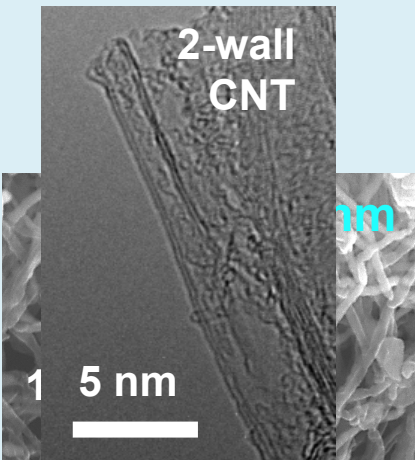


Anna Klug

Scaling Mastermind

- BS Mechanical Engineering, Union College
- Systems level design and thermal management expertise

GROWTH STRATEGY



Target markets identified
Small diameter
MWCNTs
2018

Samples to
target first
customers
2019

Mass
production
2021

2017
Proof of
concept
Large
diameter
MWCNT

100 nm

~ 8 nm

2018
Benchtop
20 kg
reactor

2020
Pilot plant
50 ton
capacity



INNOVATION
CROSSROADS



Seeking private funding
for transition out of lab

VALUE PROPOSITION



Low cost product overcomes barriers and enables new market opportunities



Team with unparalleled world leadership in technology area



Quickly scalable with customer demand



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U.S. DEPARTMENT OF
ENERGY

 **OAK RIDGE**
National Laboratory

CENTER FOR NANOPHASE
MATERIALS SCIENCES

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Renewable Energy

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