
Managing NanoEHS: Overview from the Lab to the Plant

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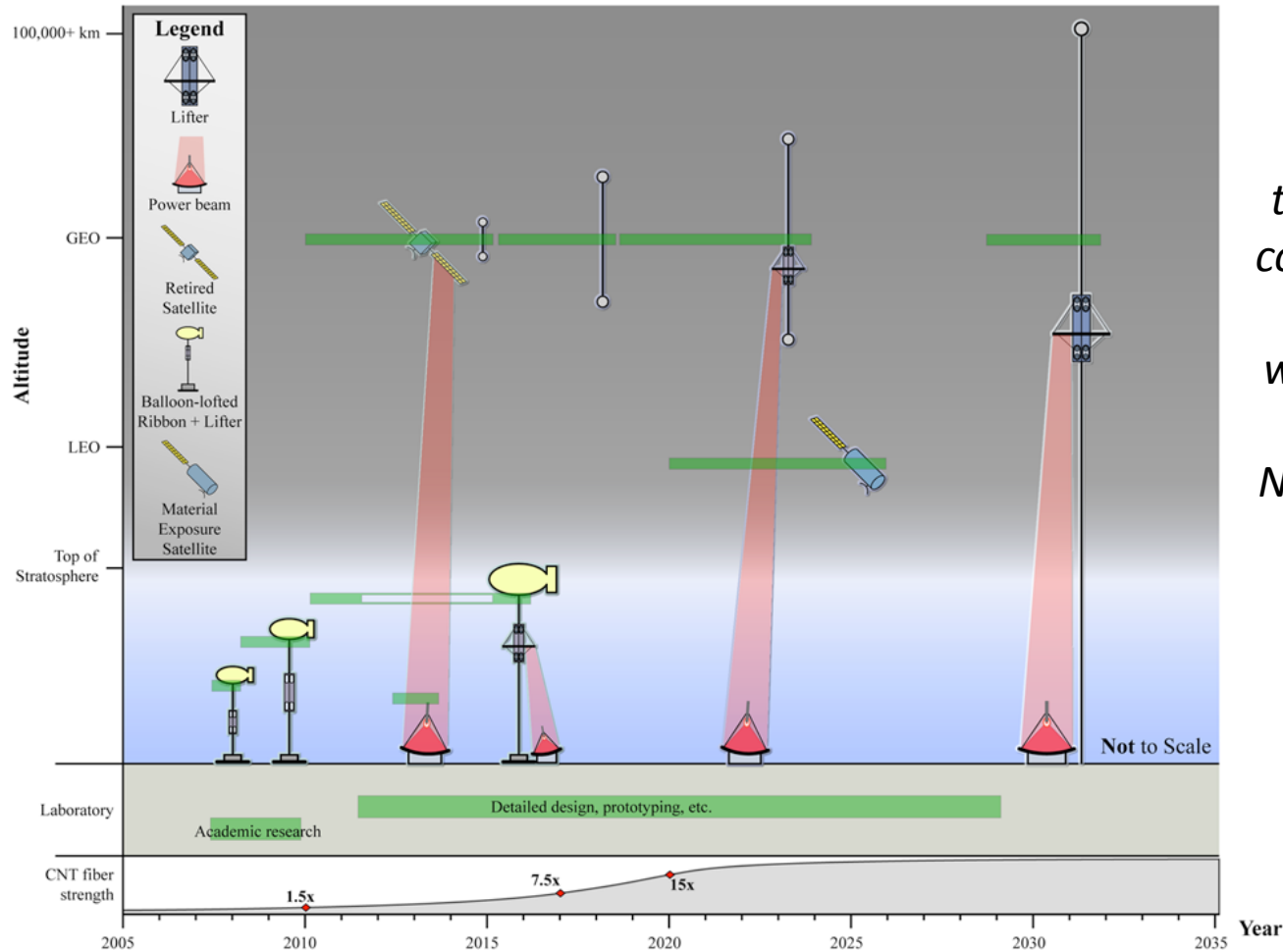
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Impressions of Nanotech

LIFTPORT SPACE ELEVATOR ROADMAP V. 1.0 PUBLIC BETA

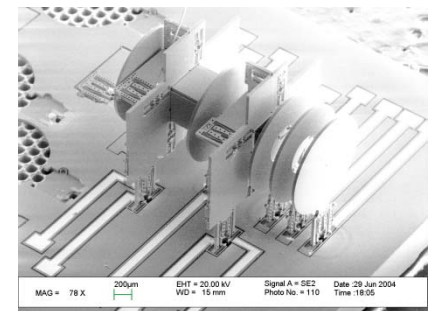


A carbon nanotube string the width of sewing thread could easily lift a large car. A nanotube elevator ribbon would need to be no thicker than plastic food wrap. Nanotubes would also make the elevator car light, though large.

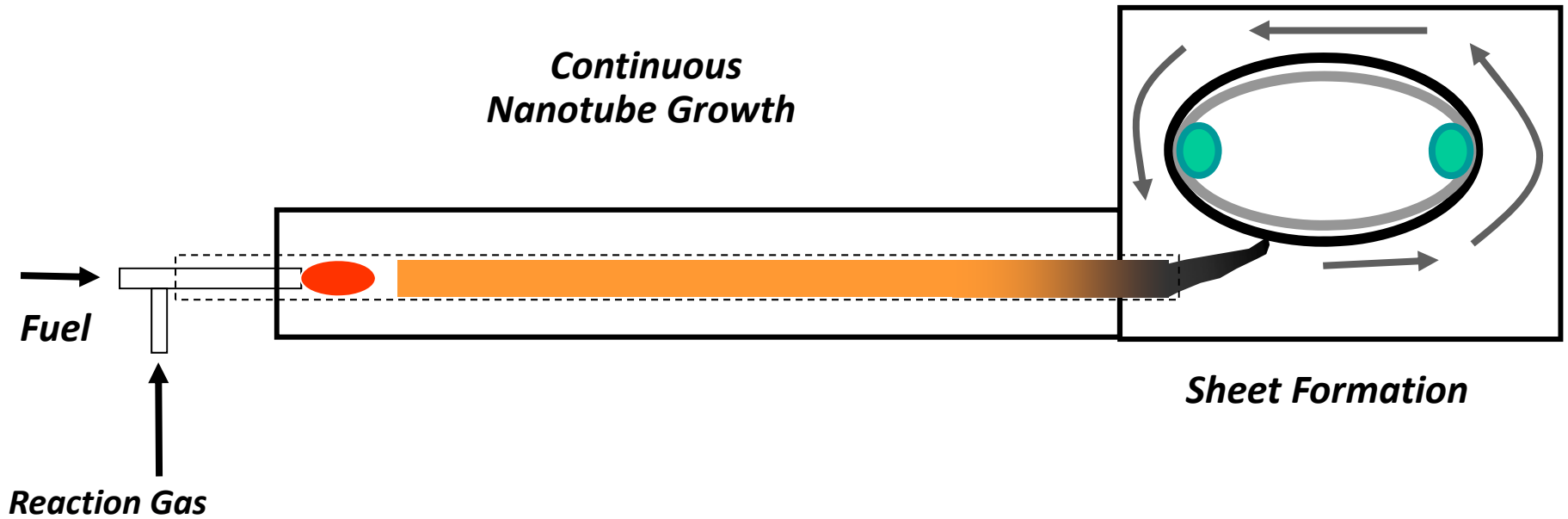
CNNMoney.com (2006)

State of Nanotechnology Business Today

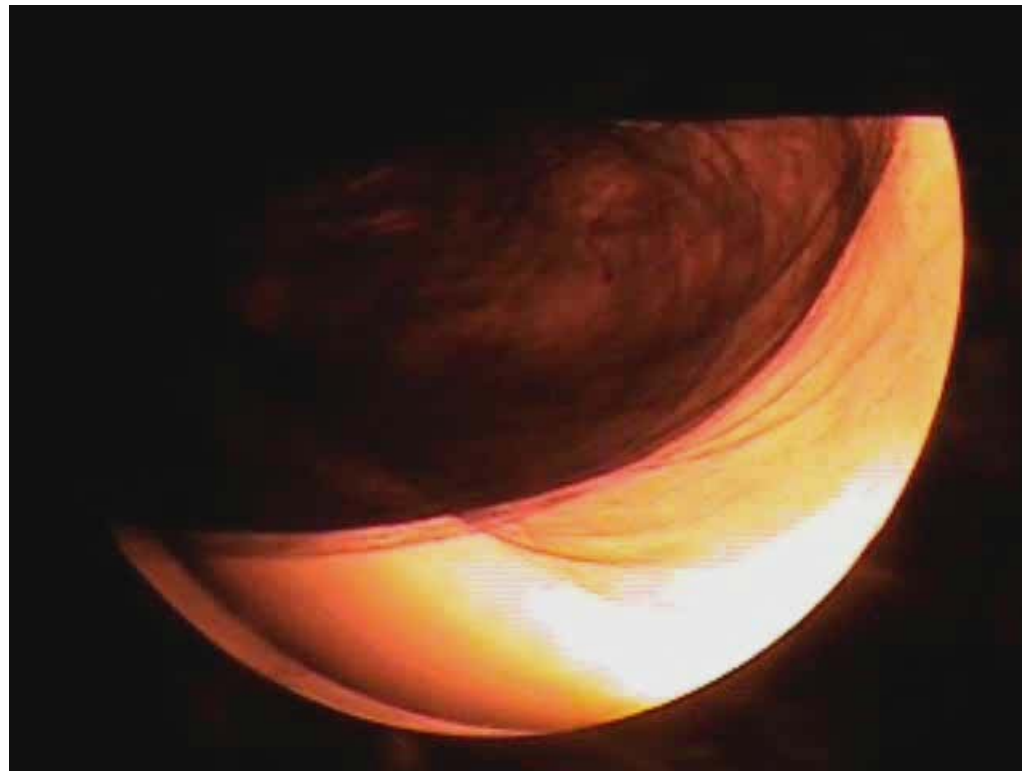
- There is no “killer app,” only “assassin apps”
 - Structural composites
 - Multipurpose materials
- Promising materials:
 - Carbon nanotubes
 - Nanotitania and other inorganic oxides
 - Nanosilver
 - Nanogold
 - Quantum dots
- No intrinsically “nano” devices
 - No atom-by-atom assembly
 - No massively parallel assembly



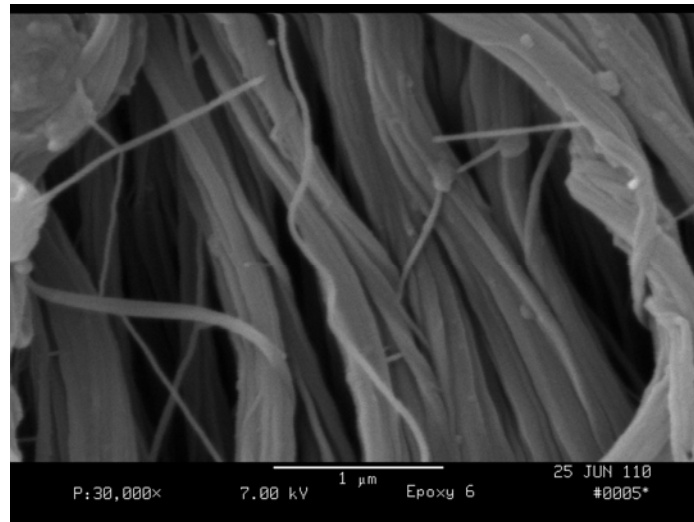
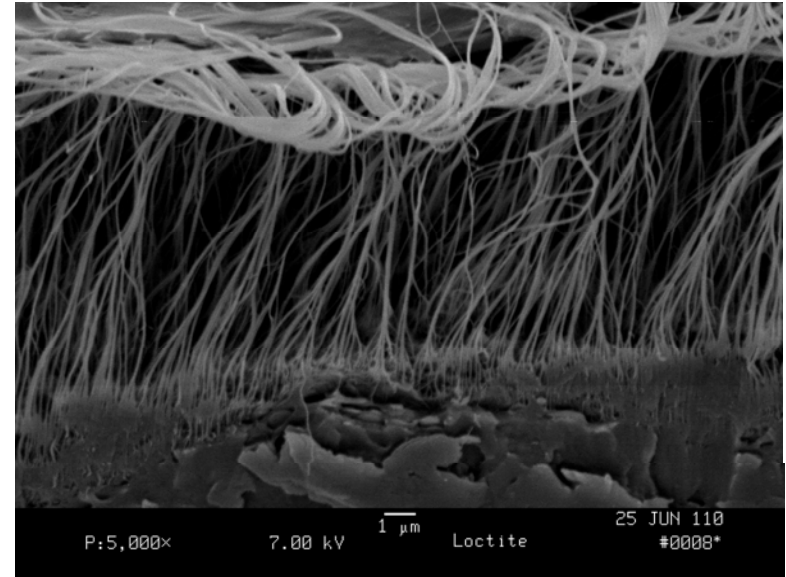
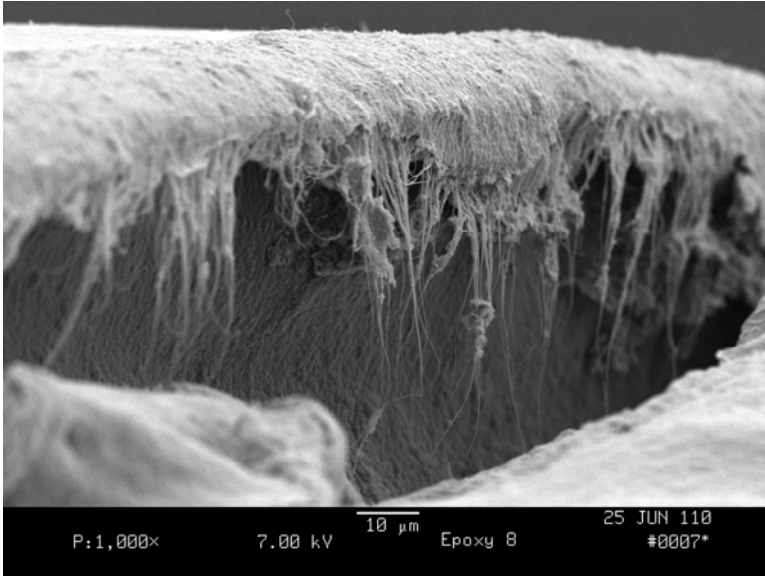
Process Overview



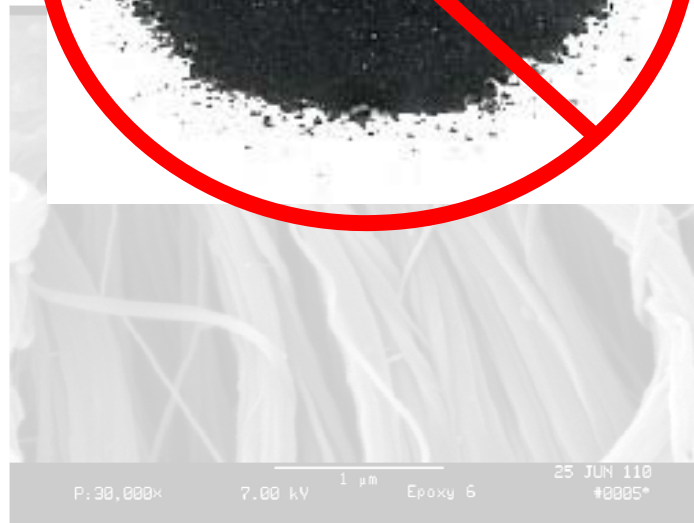
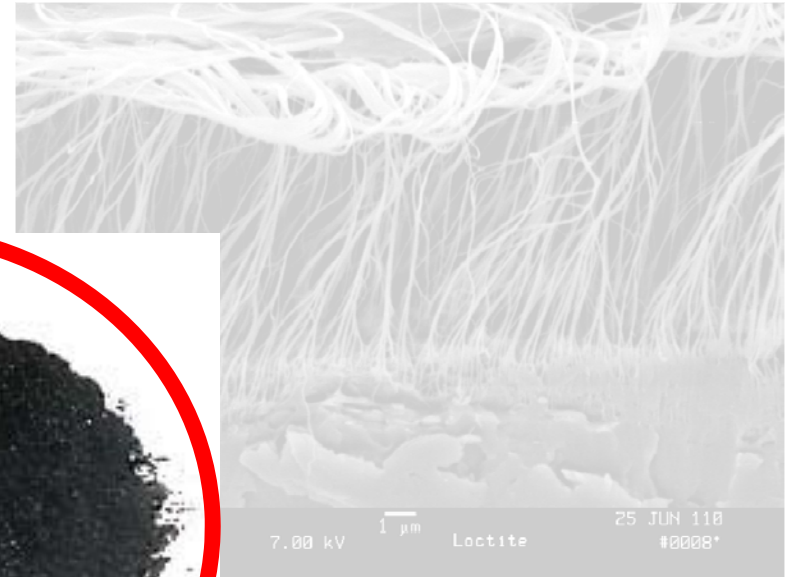
Typical Production



Nanocomp's CNTs



Nanocomp's CNTs



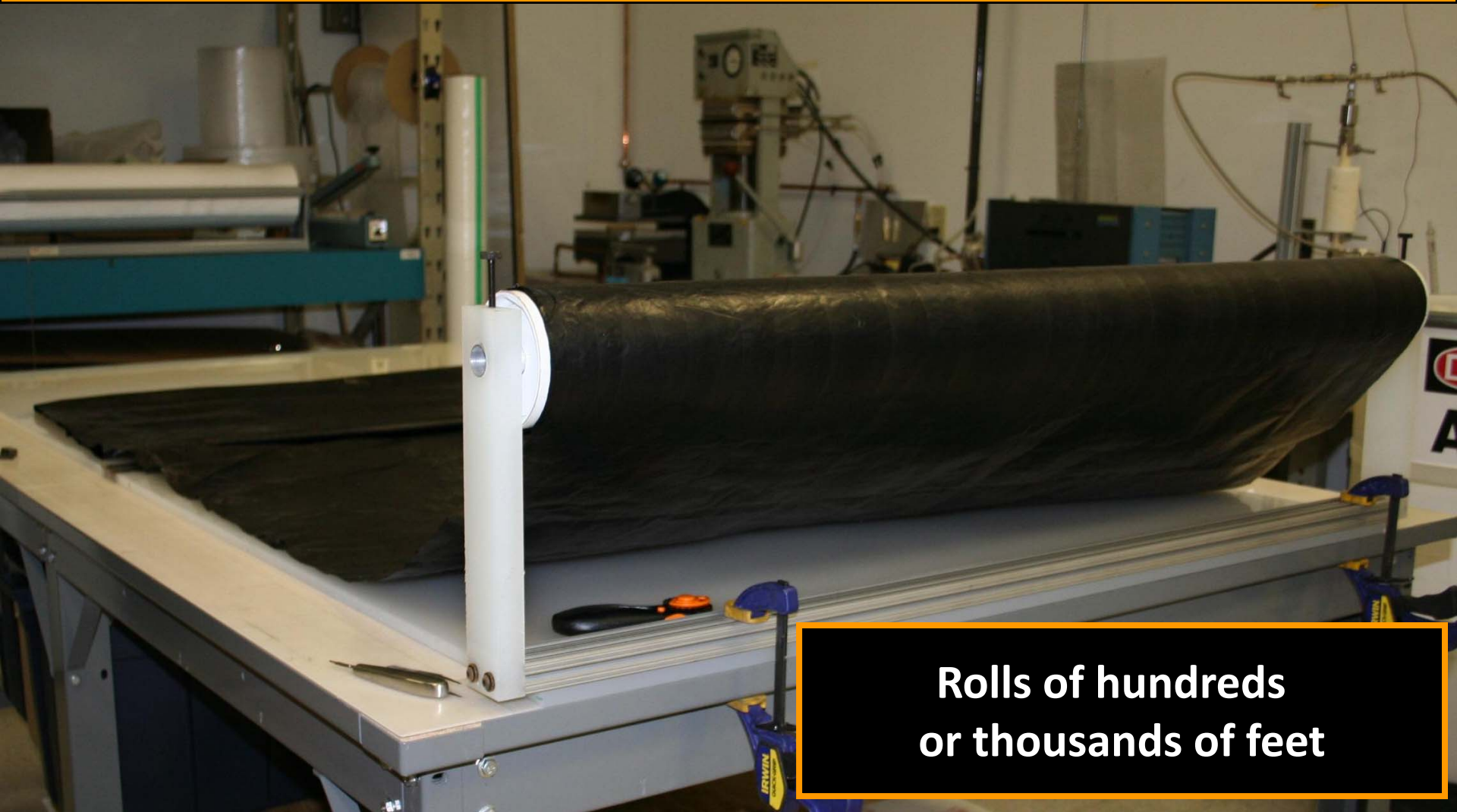
World's Leading Producer Of CNT Spun Materials



**Kilometer
Spools**



CNT Rollstock Designed for Prepreg



**Rolls of hundreds
or thousands of feet**

Increases Everywhere

- Employees
 - 2004 – 5 (R&D)
 - 2007 – 37 (R&D and Engineering)
 - 2010 – 50 (R&D, Engineering, & Production)
 - 2013 – 300? (90% Production)
- Output
 - 2004 - 10 grams/annum
 - 2007 – 1 kg/annum
 - 2010 – 100 kg/annum
 - 2013 – 20 tons/annum?

Existing Production Facility



Our New Plant



Before Moving In...



EHS Shareholders

- Corporate Investors
- Insurers
- Workers
- The Public
- Federal, State, & Local Officials
 - Emergency Response
 - Permitting
- Customers
 - Internal EHS

Customers

- Drop-in product
 - No changes to process or equipment
 - No burden in terms of protection and disposal
- Release from Liability/Indemnification
- Information/Assurance/Confidence
- Internal Customer – Company's Own EHS
- Nanocomp EHS is a resource, not a partner

Lifecycle Management

- Scope
 - Cradle-to-grave
 - Cradle-to-gate
 - Cradle-to-cradle
- Inputs/Outputs
 - Energy
 - Materials
 - Labor
 - Releases/Potential Releases
- Limits on Applications/Products

Investors

- Company has comprehensive and appropriate EHS program for both present and future
- Risk is properly evaluated and minimized
- Costs are properly evaluated and minimized
- Controls in place
- External knowledge of safety is managed

Partners

- NIOSH
 - Ventilation Systems
 - PPE
- TURI
 - Site monitoring by vetted party
- EPA
 - Anticipate/Collaborate
- Center for High Rate Nanomanufacturing
- Instrument Makers

Policies/Procedures Needed

- Hazard Communication
- Ventilation
- Housekeeping
- Spill Clean-up
- Respiratory Protective Equipment
- Gloves
- Chemical Protective Clothing and Footwear
- Eye and Face Protection
- Locker, Shower, and Change Rooms
- Medical Exams and Tests
- Access to Medical and Monitoring Data

In Closing

