

Developing Skills Based on Business Requirements

Business Services Summit

May 8-10, 2013



UNITED STATES DEPARTMENT OF LABOR
Employment and Training Administration
Region 3 - Atlanta

Welcome

Deb Miller

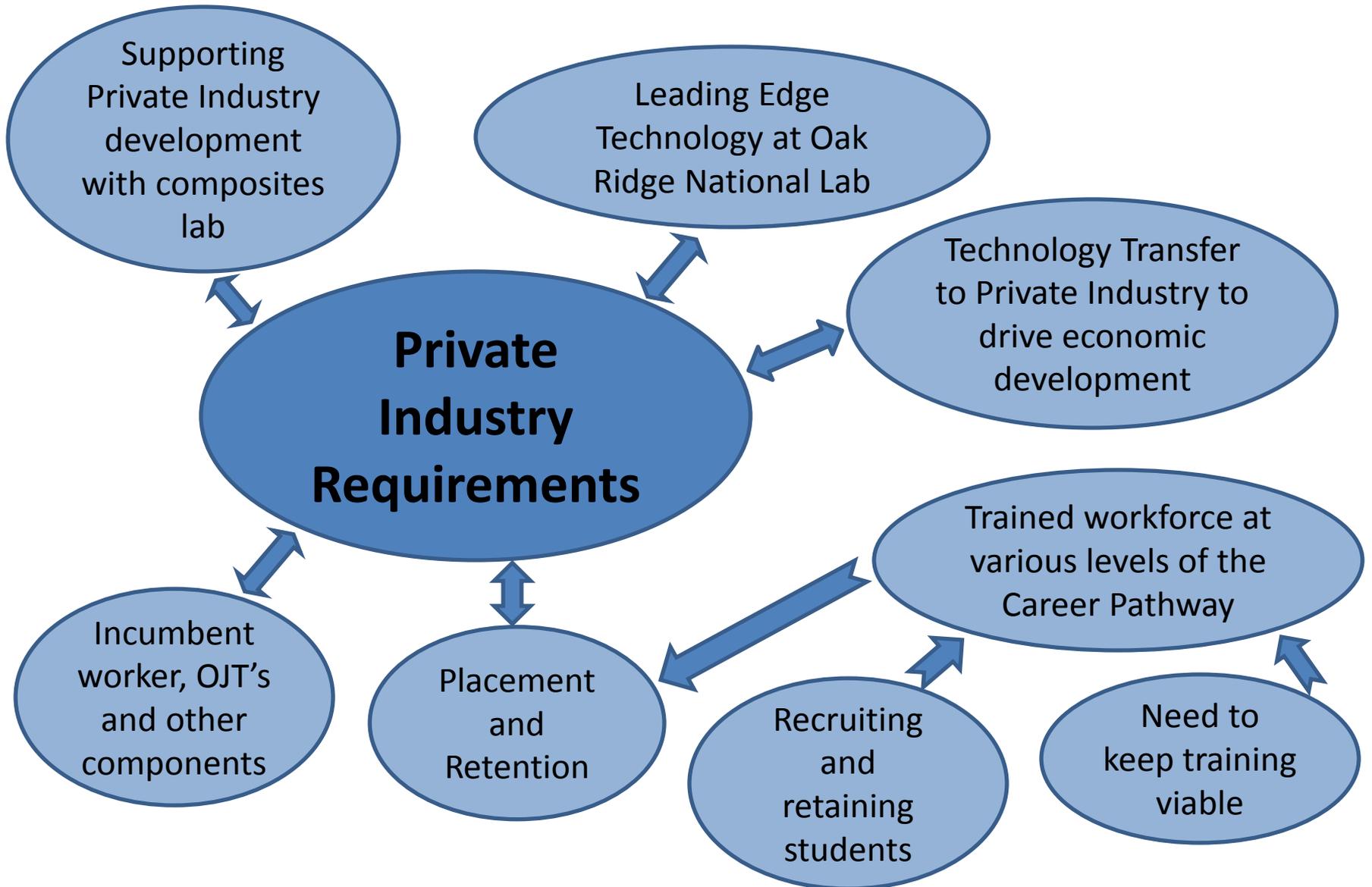
Director of Grants Development
Roane State Community College



Topics of Discussion

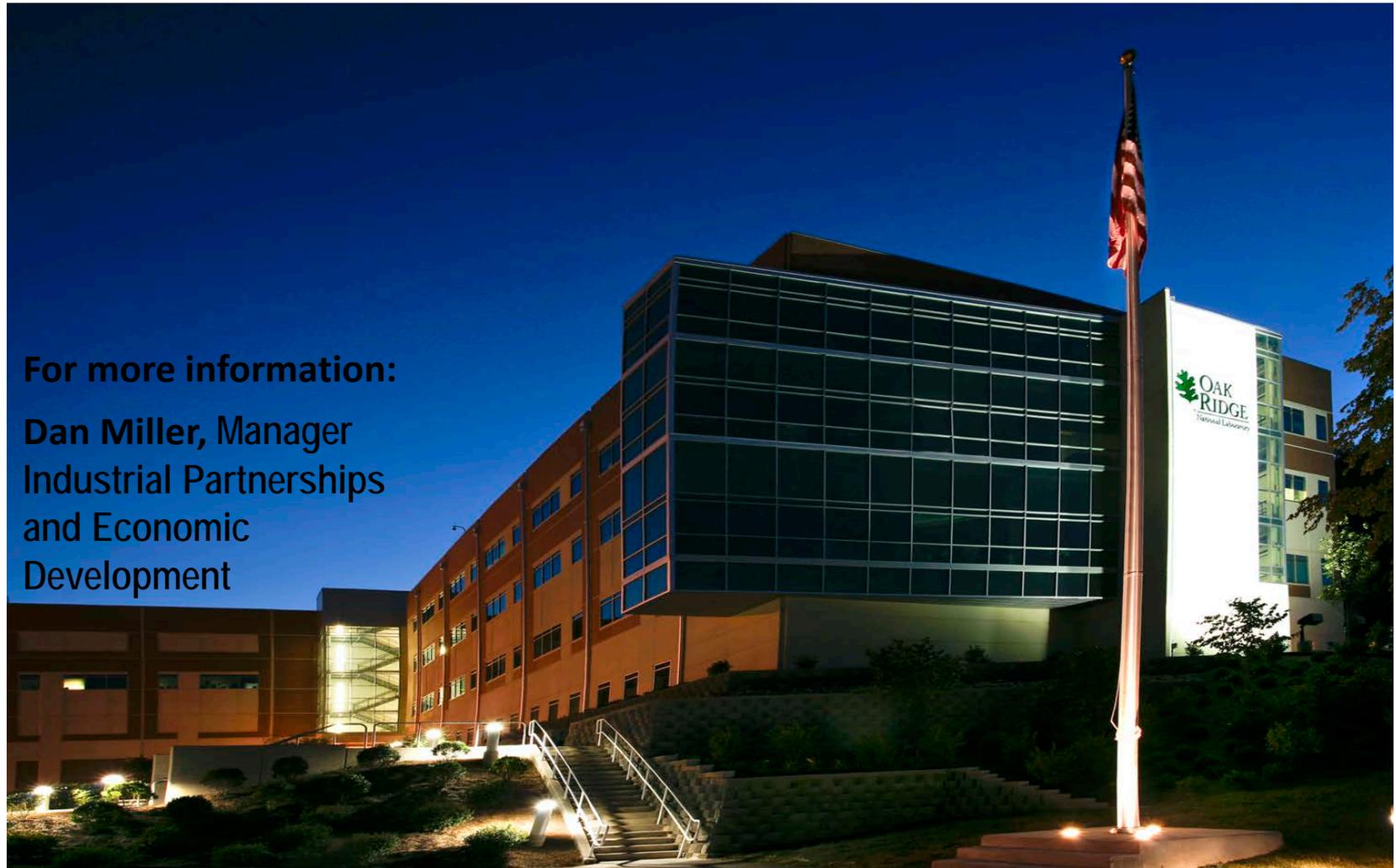
- **Overview and Program Design** – Deb Miller, Roane State Community College
- **Composite Materials and Partnerships with Oak Ridge National Laboratory** – Dan Miller, ORNL
- **Economic Development** – Jesse Smith, Innovation Valley, Inc.
- **Private Industry and Advisory Board** – Tom Ballard and Michelle Love
- **Career Pathway Training** – Deb Miller, Roane State
- **Curriculum Development and Design** – Bob Gatton, Roane State
- **Meeting Industry Needs with a Composites Lab** – Andy Pokelwaldt, Roane State
- **Challenges, Barriers & Successes** – Deb Miller, Roane State

Program Design



Oak Ridge National Laboratory:

Composite Materials and Partnerships



For more information:

Dan Miller, Manager
Industrial Partnerships
and Economic
Development

The S&T Partnerships team is a front door to the laboratory

Industrial and
Economic
Development
Partnerships



Technology
Transfer



IP legal
Staff



University
Partnerships



ORNL has a significant opportunity in carbon fiber

Opportunity	Challenge	Increasing demand
<ul style="list-style-type: none">• Create strong, lightweight materials to help auto makers meet rising CAFE standards• Develop materials for other applications as well	<ul style="list-style-type: none">• Industry needs to decrease carbon fiber cost by 50%	<ul style="list-style-type: none">• Worldwide demand for carbon fiber can quadruple in 5 years based on automotive market alone (Lucintel estimates)



© GM

Carbon Fiber Technology Facility

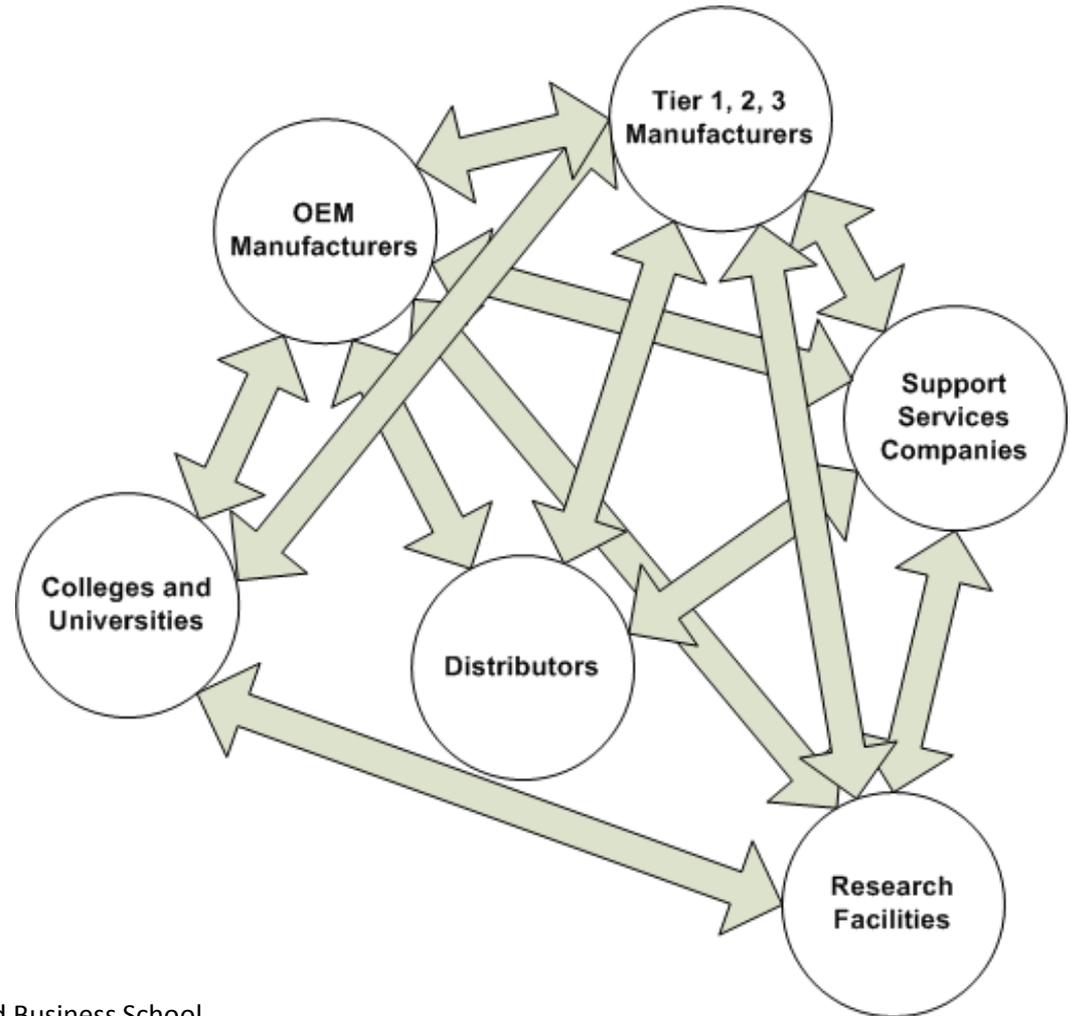
Focused on demonstrating the scalability
of low-cost carbon fiber

- 42,000 ft² facility, equipped using \$34.7M in DOE funding (awarded in 2009)
 - Facility occupancy: November 2011
 - Operations begin: January 2013
- Production capacity: 25 tons/year of fiber from multiple precursors in various forms
- Leverages and promotes industry partnerships
- Provides internships to Roane State Graduates



We're working to build an industry cluster around carbon fiber composites

- Geographic concentrations of interconnected companies and institutions in a particular field
- Critical mass leads to a competitive advantage in a region
- Well-known examples: Silicon Valley, Research Triangle, Route 128



Oak Ridge Carbon Fiber Composites Consortium

Our Mission

To accelerate the development and deployment of new lower cost carbon fiber composite materials, creating a new generation of strong, light-weight materials to enhance America's economic competitiveness.



Established July, 2011





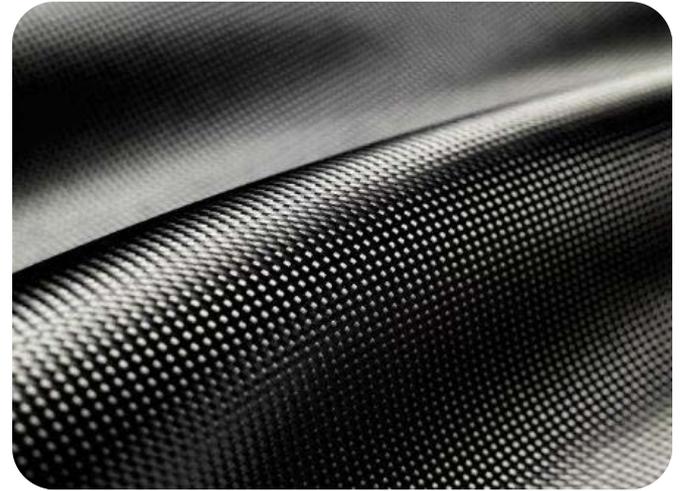
Currently at 50 Members and continuing to grow!

- 3M Company
- ABC Group Sales & Engineering
- Advanced Composites Group
- Alpha Industries
- ATK Launch Systems
- BASF Corporation
- Chomarat NA, LLC
- Composite Applications Group
- Continental Structural Plastics
- Cytec Carbon Fibers
- Dow Chemical Company
- Despatch Industries
- Faurecia
- Fibria
- Ford Motor Company
- General Electric
- Global Composites Solutions
- Graftech International
- Hanwha Azdel
- Harper International
- Hills, Inc.
- Innovation Valley Inc.
- Inventionia
- INOAC USA
- Lignol Innovations
- Materials & Chemistry Laboratory
- Metalsa Structural Products
- NFT, Inc.
- NovusFolium
- Plasan Carbon Composites
- Roane State Comm. College
- Sabic Innovative Plastics
- SGL Carbon Fibers
- SSOE Group
- Steelcase
- Swift Engineering
- Toho Tenax America
- United Technologies Research Center
- UT-Battelle
- Viridia, Inc.
- Volkswagen Group of America



What will success look like in ten years?

- A thriving industry consortium with multiple R&D collaborations with ORNL staff
- New commercial applications of low-cost carbon fiber in the marketplace
- Self-sufficient Roane State training programs providing workers with necessary skills in composites
- New company locations in the region and state
- New technology-based jobs!



Economic Development

Jesse Smith

Innovation Valley, Inc.

Director of Technology



The strategy to drive business growth in our region.

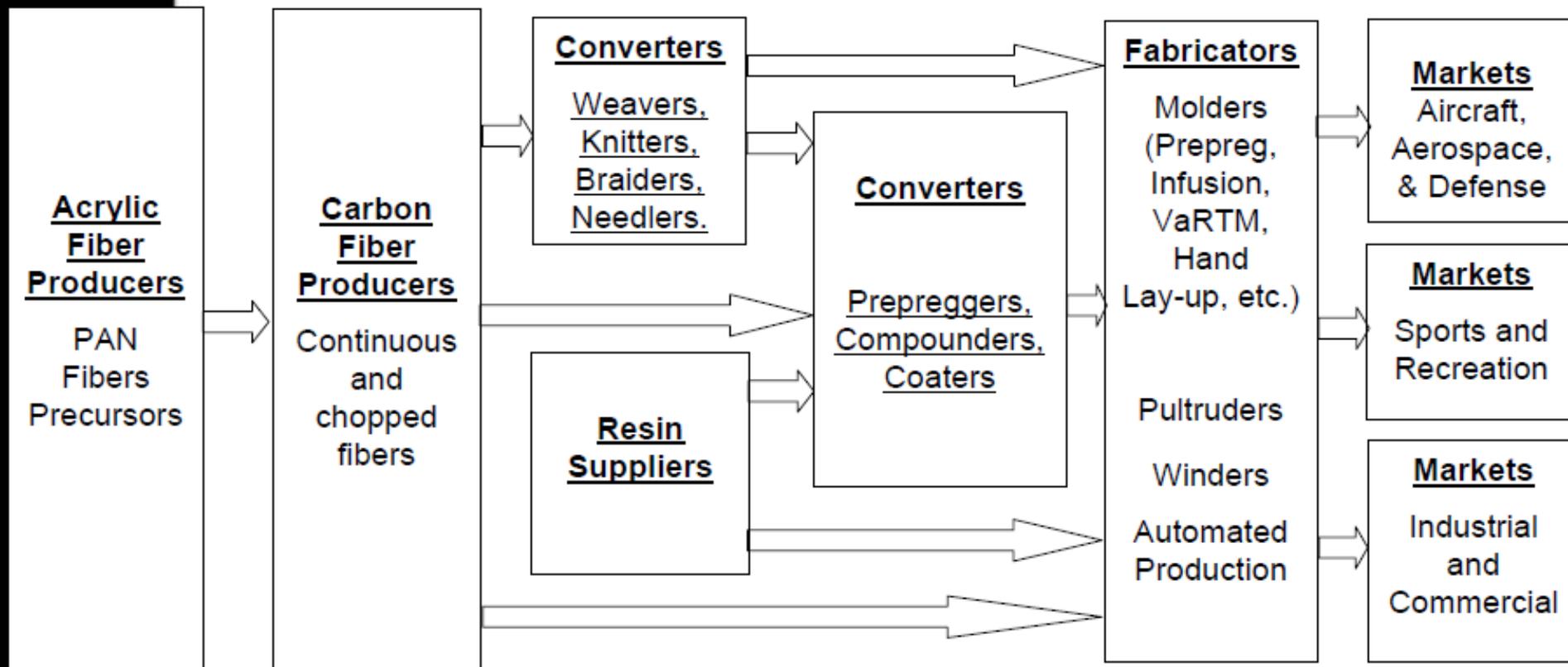
2012 Site Selection Factors

1. Labor Costs
2. Highway Accessibility
3. Availability of Skilled Labor
4. Availability of Advanced ICT Services
5. Occupancy or Construction Costs



CARBON FIBER SUPPLY CHAIN

...series of **CUSTOMER-SUPPLIER** relationships



CW 2013

COMPOSITESWORLD

CARBON FIBER

Don't miss this opportunity to learn from the industry's leading innovators and network with decision makers and key executives from all aspects of the carbon fiber supply chain!

This year we're including an optional tour of Oak Ridge National Laboratory's carbon fiber manufacturing facilities!

CHAIRMAN: Andrew Head, President
A&P Technology Inc.

IN ASSOCIATION WITH:

HIGH-PERFORMANCE
Composites

COMPOSITES
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MARK YOUR CALENDAR FOR CARBON FIBER 2013

December 9-12, 2013 / Crowne Plaza Knoxville / Knoxville, TN USA



Register for the Carbon Fiber 2013 e-newsletter and get up-to-date information on speakers, networking events and more!

LEARN MORE

<http://short.compositesworld.com/CF2013>

Is it working?

MJLM

CONSULTANTS & BUSINESS ADVISORS



PKMJ Technical Services
"Providing Software and Engineering Solutions"



ENERCON

Excellence—Every project. Every day.



Private Industry and Advisory Board



Tom Ballard

Advisory Board Vice Chair for RSCC
Advanced Manufacturing & Materials

Michelle Love

Tru-Design



Why Grow the Industry?

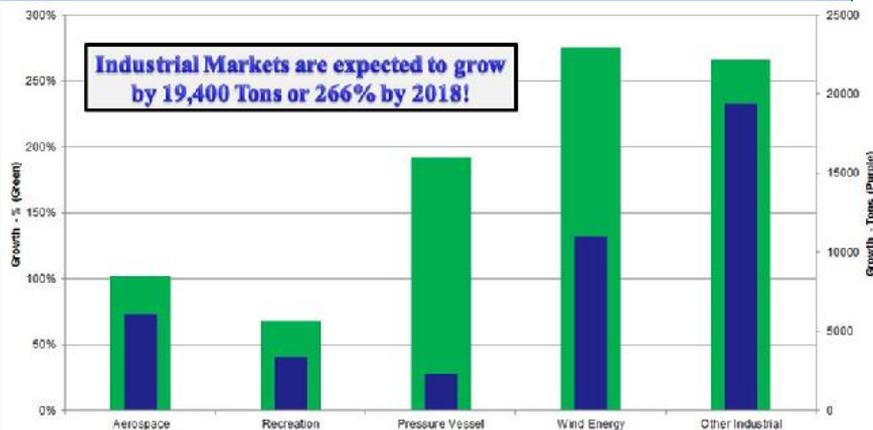
- Lighter vehicles, both cars and trucks, are needed for increased fuel efficiency
- Composite vehicles will last longer (corrosion resistant)
- Lighter cargo containers
- Payload optimization



Barriers and Solutions

- Cost of Carbon Fiber
- Volume manufacturing techniques
- Trained workforce
- Expansion into industries other than transportation

- Collaboration and cooperation across the region
- ORNL's world-leading research & development
- Roane State's Workforce Programs
- Oak Ridge Carbon Fiber Composites Consortium
 - Growth/Development of Small Businesses
 - Transition of businesses to composites





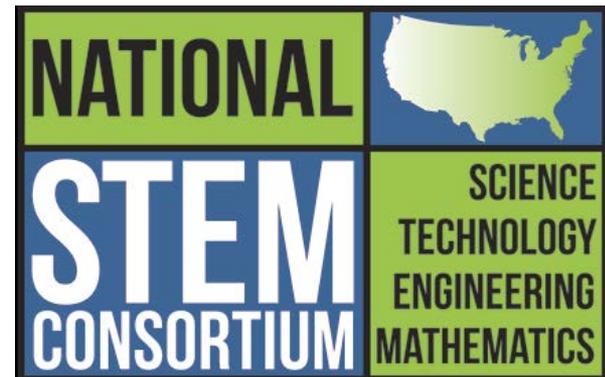
- Access to a trained workforce is critical for a small business
 - ❖ lowers hiring costs
 - ❖ lowers training costs
 - ❖ reduces turnover
- Connections with ORNL, Composite Application Group, Borla Industries, etc. are beneficial
 - ❖ pursuing growth and expansion
 - ❖ accessing opportunities

Career Pathway Training

Deb Miller

Director of Grants Development

Roane State Community College



3 Grants Targeting Student and Employer Needs

*Addressing incumbent worker, internship and
OJT needs*

*Providing Placement support through the college
and LWIAs*

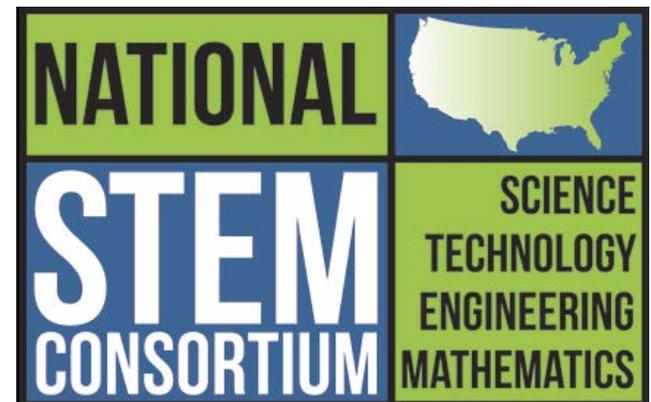
Advanced Materials Training and Education Center

The logo for AMTEC features the word "AMTEC" in a bold, red, sans-serif font. To the left of the text is a stylized graphic consisting of two parallel, slanted lines that form a chevron shape pointing to the right. The lines are grey with a slight gradient and a drop shadow effect.

- Funded with a USDOL Community Based Job Training Grant
- Up to 14 weeks of non-credit training in entry level skills
 - Career Readiness Certification requirements
 - OSHA 30 hour certification
 - Basic Plumbing, Wiring/Electrical, etc.
 - Basic Chemistry
 - Quality Assurance
 - Employability Skills and Mock Interviews
 - Capstones in Composite Materials and Solar Energy
 - And more

National Stem Consortium

- Funded with a USDOL Round 1 TAACCCT grant as a co-grantee through Anne Arundel Community College
- One Year/3 semester college credit certificate
 - Composite Materials or Mechatronics
 - Basic Skills Training included in training
 - In-depth hands-on courses



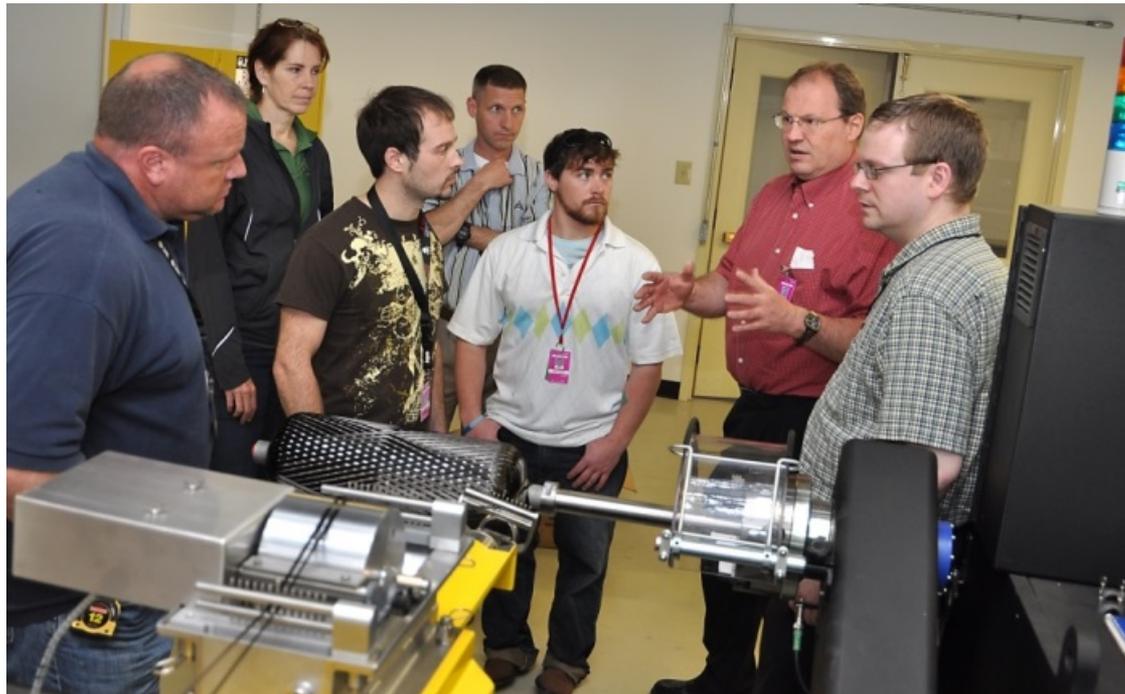
Advanced Composites Employment (ACE) Accelerator

- Funded with an Jobs Accelerator Grant
 - U.S. Department of Labor (USDOL)
 - Economic Development Administration (EDA)
 - Small Business Administration (SBA)



ACE USDOL: Three college level composite materials courses

- Electives as a part of the General Technology AAS (2 year) degree
- Electives after completion of a 2 or 4 year degree



ACE EDA: Economic Development components to drive industry growth

- Outreach to private industry to move products to composite materials
- Networking and education to private industry, economic development, educators, etc. on composite materials



ACE SBA

Work with small or new businesses to
move into or enhance composite
materials production.

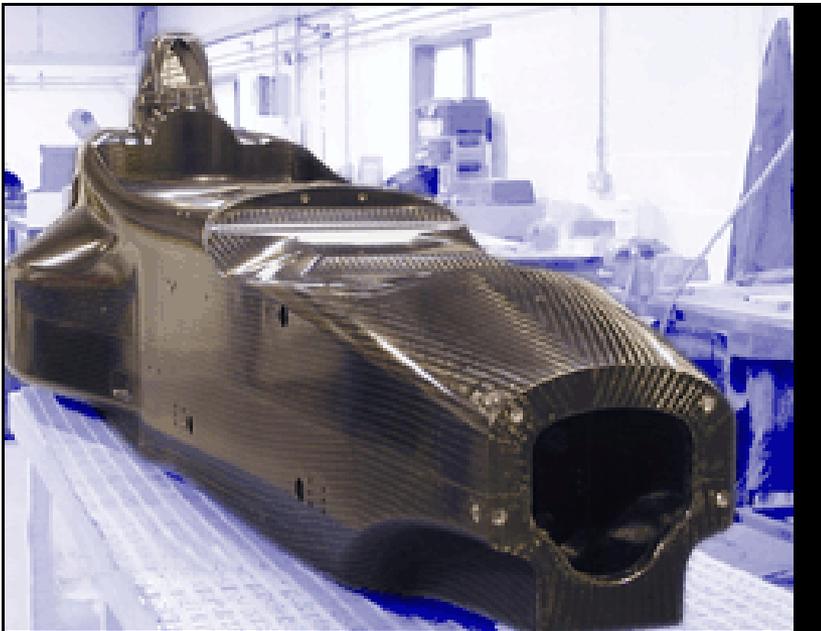


Curriculum Development and Design

Bob Gatton

National STEM Grant Director

Roane State Community College



Curriculum Development

- Bringing together industry and education

Our Market – East Tennessee

- Composites – We have suppliers of resin and fabrics to finished goods manufacturers:
 - ❖ East Tennessee is the recreational boat manufacturing capitol of America.
 - ❖ The area is also quickly becoming a leader in Advanced Composites.
- Mechatronics – our area has companies that range from automotive body panels factories to soft drink bottling plants.

Curriculum Development

- A two-pronged approach
 - Mesh grant requirements with common interests for local industry.
 - ❖ Incorporate basic skills training – STEM Bridge and CRC
 - ❖ Utilize private industry subject-matter expertise
 - ❖ Leverage ORNL knowledge base
 - ❖ Partner with other education institutions – UT, PSCC, etc.
 - Outside of the grant, work with individual companies to create trainings that fit specific needs.

Meeting Industry Needs with a Composites Lab

Andy Pokelwaldt

ACE Project Director

Roane State Community College



Composites Lab

Key Development Elements

- Focus on meeting industry needs
- Advice and involvement from industry
- Maintaining industry focus in lab training
- Planning and development of relevant training activities

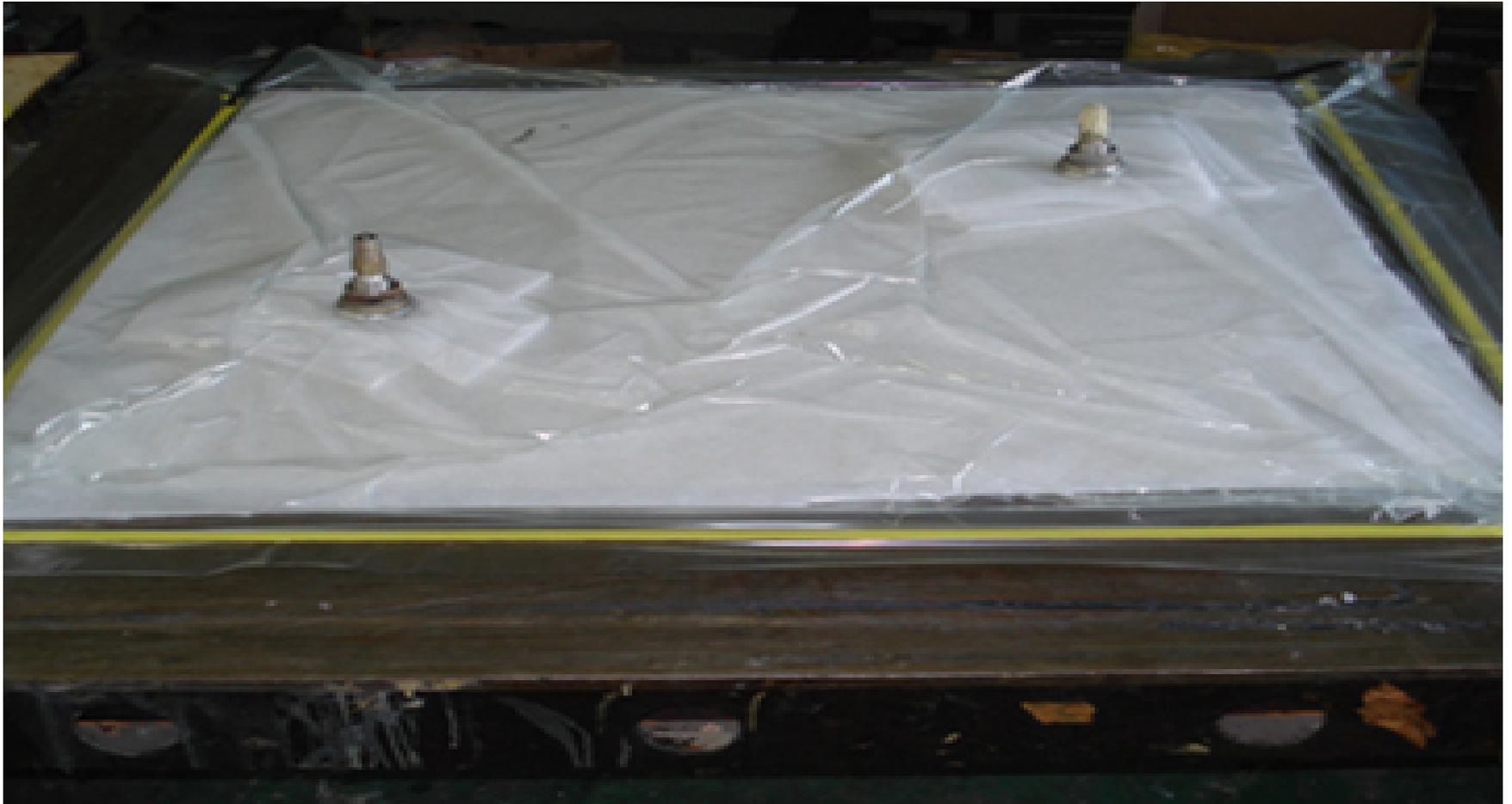


Heated Platen Press

Composites Lab

Challenges and Barriers

- Permitting and regulations
- Safety Requirements
- Budget, equipment acquisitions and supply sources
- Meeting requirements of funding sources, employers and college expertise
- Maintenance requirements
- Implementing within an array of rules
 - College, Grants/Federal, State, ORNL, etc.



Vacuum Bag Molding



Resin Infusion System Injector

Challenges and Barriers

- Keeping curricula focused on changing business needs
- Implementing a composites lab to meet industry needs
 - Blending ORNL, Roane State, Grants, State and other rules and regulations
- Getting private industry to hire our grads
- Talking Private Industry's language
- Moving at a Private Industry pace
- Determining your assets to grow your industry cluster
- Grant sustainability

Questions and Discussion