

# UV/EB Technology Center

State University of New York  
College of Environmental Science  
and Forestry

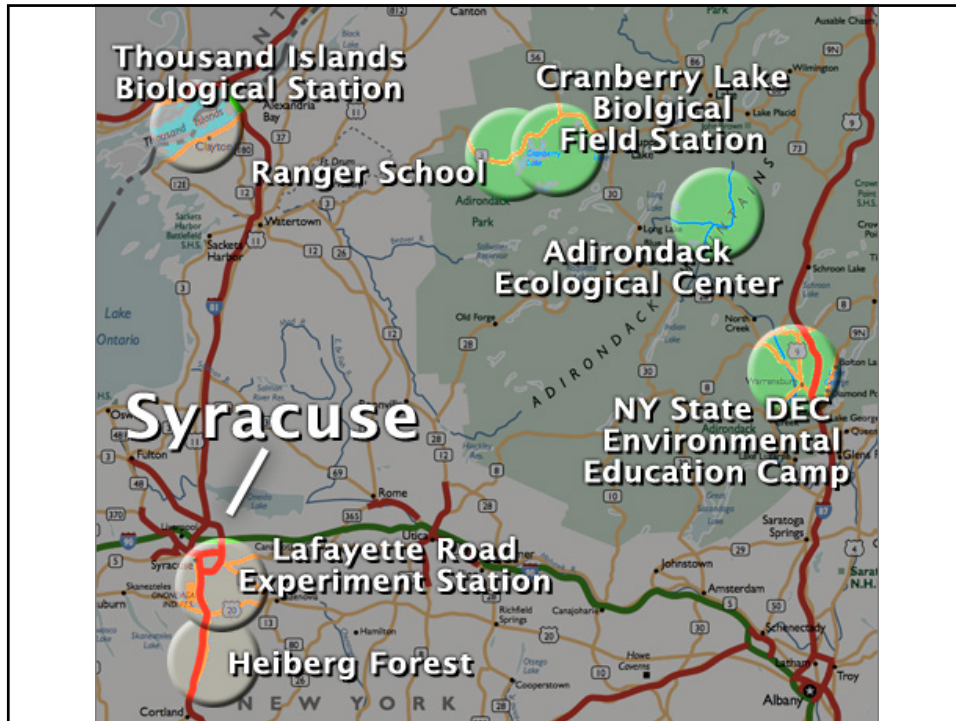
Mark S. Driscoll



## SUNY ESF

- **Founded in 1911.**
- **The campus occupies 17.76 acres in Syracuse and 25,000 acres on 7 regional campuses throughout Central New York and the Adirondack Park.**





## SUNY ESF

- Founded in 1911.
- The campus occupies 17.76 acres in Syracuse and 25,000 acres on 7 regional campuses throughout Central New York and the Adirondack Park.
- **2013 enrollment totaled 2,250 students.**
  - 1700 undergraduates students.
  - 550 graduate students.



# History

- **Early Years**
  - **Tracer studies with radioactive materials**
    - H-3, C-14 and P-32
  - **Polymerization**
    - Co-60
- **Middle Years**
  - I come to the college conduct tracer studies
  - Learn to conduct radiation based polymerization



# History

- **2009 – Today**
  - Institute for Sustainable Materials and Manufacturing**
  - Center for Sustainable Coatings, Adhesives and Composites**



# History

- 2009 – Today

## Institute for Sustainable Materials and Manufacturing

**UV/EB Technology Center**  
**NYSERDA**



# UV/EB Technology Center

- Goal

- To bring ESF researchers, scientists from industry, equipment manufacturers, end-users, and government agencies together to study and transfer the latest advances in sustainable product development and manufacturing, using UV light, EB, and x-ray technologies. Through collaborative R&D, formal and informal education, pilot plant use, and independent evaluation.



# SUNY ESF

- **The mission of the College of Environmental Science and Forestry is to advance knowledge and skills and to promote the leadership necessary for the stewardship of both the natural and designed environments.**



## UV/EB Technology Center

- **This may seem like one more university jumping into the area of industrial collaboration since it is the vogue thing to do.**
- **ESF has a long history of working with industry.**



## UV/EB Technology Center

- The college was established to work with the forestry industry in New York State to help professionalize the industry through scientific investigation and the development of best practices.
- Over the years many other collaborations have developed.



## UV/EB Technology Center

- Tropical Timber Institute.
- Wood Utilization Service.
- Tree Pest Information Service.
- Cellulose Research Institute.
- Polymer Research Institute.
- Bioprocess Engineering.
- Constructed Wetlands.



## UV/EB Technology Center

- Empire State Paper Research Institute (ESPRI) was established to meet the research needs of the pulp and paper industry worldwide. Today ESPRI membership includes some 45 companies from 11 countries.



## UV/EB Technology Center

- Goals
  - R&D
  - Education
  - Pilot plant
  - Independent evaluation



## UV/EB Technology Center

- **Goals**

- **R&D**

- To bring ESF researchers, scientists from industry, equipment manufacturers, end-users, and government agencies together to study and transfer the latest advances in sustainable product development and manufacturing, using UV light, EB, and x-ray technologies.



## UV/EB Technology Center

- **Goals**

- **R&D**

- **Collaborative**

- Ultra clear scratch resistant resins
      - Ballistic panels
      - Filtration paper
      - Rapid prototyping
      - Custom resins
      - Cellulosic ethanol





## UV/EB Technology Center

- **Goals**

- **R&D**

- **In house**

- **Wood-polymer composites**
      - **Natural fiber composites**
      - **Soil erosion products**
      - **Low energy dosimetry**
      - **Visible light curing**
      - **Carbon skeleton composites**



## UV/EB Technology Center

- **Goals**

- **Education**

- **To educate interested parties at the national, regional, and graduate and undergraduate levels through formal classes, outreach, training sessions, and webinars**
    - **Online post baccalaureate certificate program.**
      - **More detail later in this presentation.**



## UV/EB Technology Center

- **Goals**

- **Pilot plant**

- To allow instrument manufactures, formulators and end users to use the Center's equipment to qualify new equipment and chemistries



## UV/EB Technology Center

- **Goals**

- **Independent evaluation**

- The Center and its staff will conduct independent testing and evaluation on products for instrument manufactures, formulators or end users.



## UV/EB Technology Center

- **Goals**

- **Proposal Assistance**

- The Center has and will continue to assist in the development of proposals for companies and other partners. A larger number of our partners have used this service, and most have been funded.



## UV/EB Technology Center

- **Equipment**

- **Two electron beams**

- **ESI CB 150 Electrocurtain**
    - **AEB Application Development Unit**

- **IBA Industrial**



## UV/EB Technology Center

- **Equipment**
  - **UV systems**
    - **Fusion DRS10 conveyor system, with nitrogen inerting and a Light Hammer 10**
    - **4 Nordson Coolwave 2 systems**



## UV/EB Technology Center

- **Equipment**
  - **UV systems**
    - **Numerous arc lamp systems**
    - **Florescence curing systems**
    - **LED array**



## UV/EB Technology Center

- **Equipment**
  - **Durability testing**
    - Salt spray
    - Q Fog CCT
    - UVCON weatherization chamber
    - Taber abrasion tester



## UV/EB Technology Center

- **Equipment**
  - TA DMA
  - Rheometer



## UV/EB Technology Center

- **Equipment**
  - **Presses**
    - **30 ton electric**
    - **300 ton hydraulic**
    - **20 ton bench press**



## UV/EB Technology Center

- **Other services at ESF**
  - **Engineering Testing Lab**
  - **NC Brown Center for Ultra Structure Studies**
    - **Electron and light microscopes**



## UV/EB Technology Center

- **Other services at ESF**
  - **Analytical and Technical Services**
    - **Instrument repair and manufacturing**
    - **Chemical analysis**
      - NMRs
      - MSs
      - ICPs



## UV/EB Technology Center

- **Other services at ESF**
  - **Nuclear Chemistry Lab**
  - **Paper and Bio-Processing Pilot Plant**
  - **Three machine shops**



# UV/EB Technology Center

- **Directors**
  - Dr. Jennifer Smith
  - Dr. Mark Driscoll



# UV/EB Technology Center

- **Board of Advisors**
  - The board of advisors will have representation that extends from funding agencies to end users





## UV/EB Technology Center

- **Faculty**

- There are 20 faculty members that have shown and interest in using UV/EB in their research. Now about 12 are conducting some research in the area.



## UV/EB Technology Center

- **Partners**

- NYSERDA
- RadTech
- IBA Industrial
- IONICORP+
- Transparent Materials
- Rapid Cure Technologies
- MAS Engineering



# UV/EB Technology Center

- **Partners**

- Knowlton Technologies
- Strathmore Products
- Albany International
- Fusion UV
- Kent State University
- SUNY Binghamton



# UV/EB Technology Center

- **Intellectual Property**



## UV/EB Technology Center

- **Radiation Curing Program**
  - **Post Baccalaureate Certificate**
    - US Department of labor grant
    - Three course certificate
      - Introduction to Polymer Coatings
      - Radiation Curing of Polymer Technologies
      - Radiation Curing Equipment, Instrumentation and Safety



## UV/EB Technology Center

- **Radiation Curing Program**
  - **Non-credit option**
    - Introduction to Polymer Coatings
    - Radiation Curing of Polymer Technologies
    - Radiation Curing Equipment, Instrumentation and Safety
  - RadTech members get 10% discount on the non-credit option



## UV/EB Technology Center

- **Radiation Curing Program**
  - **MS and Ph.D. in**
    - **Engineering**
    - **Chemistry**
    - **Environmental Studies**



## UV/EB Technology Center

- **Radiation Curing Program**
  - **More information**
    - [www.esf.edu/outreach/radcuring](http://www.esf.edu/outreach/radcuring)



# UV/EB Technology Center

- **Tours of the Center**
  - **Mark S. Driscoll**
    - 315-470-6997
    - mdriscol@esf.edu



# UV/EB East

**uv.ebEAST** **2013** **OCTOBER 1-2, 2013** **SYRACUSE, NY**

**UV & EB Curing Conference & Exposition**

[INTRO](#) [CONFERENCE SESSIONS](#) [LIST OF EXHIBITORS](#) [TRAVEL & HOUSING](#) [REGISTRATION](#) [INTERESTED IN EXHIBITING?](#) [EVENT SCHEDULE](#)



# UV/EB East

- UV LED Curing
- Industrial Finishing
- Biobased solutions
- Innovations & Advanced Applications
- UV LED Summit



# UV/EB East

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[www.uvebeast.com](http://www.uvebeast.com)



## UV/EB East



[www.nyserda.ny.gov](http://www.nyserda.ny.gov)



### PON 2736: TTEEM

## Transformative Technologies for Energy-Efficient Manufacturing

- \$2.8 Million available for Round 2
- NYSERDA max \$400k
- 50% cost share
- Round 2 due date: January 16, 2014
- Go to: <http://www.nyserda.ny.gov/Funding-Opportunities/Current-Funding-Opportunities.aspx>
- Contact:  
Miriam Pye  
[MEP@nyserda.ny.gov](mailto:MEP@nyserda.ny.gov)



# Thank you for your time

## Questions

