

**M.C. Gill Composites Center  
Academia/Industry Partnerships**

**Dr. Timotei Centea**  
Postdoctoral Scholar,  
University of Southern California

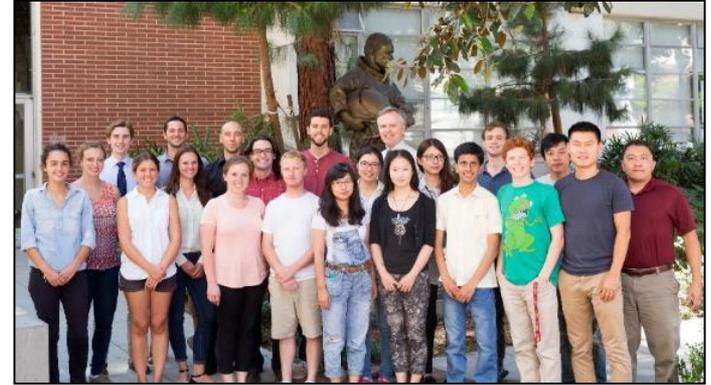
**National Aerospace Foreign  
Direct Investment Exposition**

28 October 2015

# M.C. Gill Composites Center



**Steven R Nutt, Ph.D.**  
M.C. Gill Professor  
Founder and Director  
Co-Director, CEMMA



## Select Partners



**Established in 1995**  
**Endowed in 2002 by M.C. Gill**

## Extensive facilities

- composites fabrication
- materials characterization
- mechanical testing
- design and analysis
- simulations and supercomputing

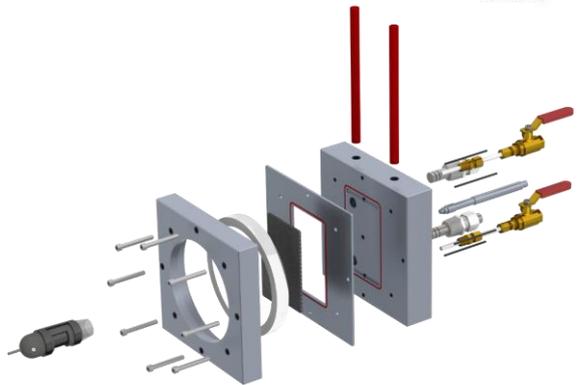
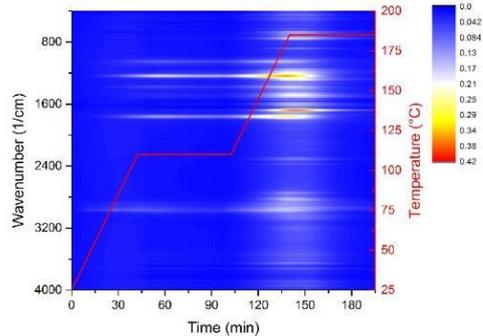
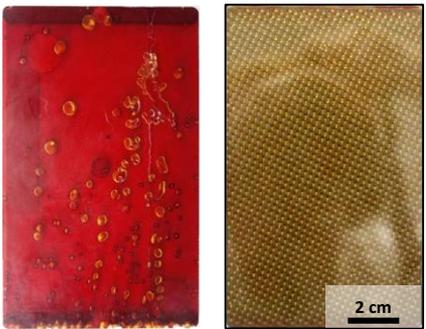
# Case Study 1: USC/Henkel Collaboration



## Eliminating Defects During Resin Transfer Molding of Novel Benzoxazine Resin

Sponsor: Henkel Corporation

Duration: Three years (in one-year contracts)



**Objective**  
Understand fundamental science of defect formation, and develop viable engineering solutions for sponsors and its customers.

- Benefits to USC**
- Research on cutting-edge materials
  - Support for PhD students
  - Publications

- Benefits to Sponsor**
- Fundamental research
  - High-quality personnel
  - Access to infrastructure

# Case Study 2: Airbus and the AIER

## Vacuum Bag-Only Prepreg Processing

Sponsor: Airbus Institute for Engineering Research

Duration: Three year grants



### Objective

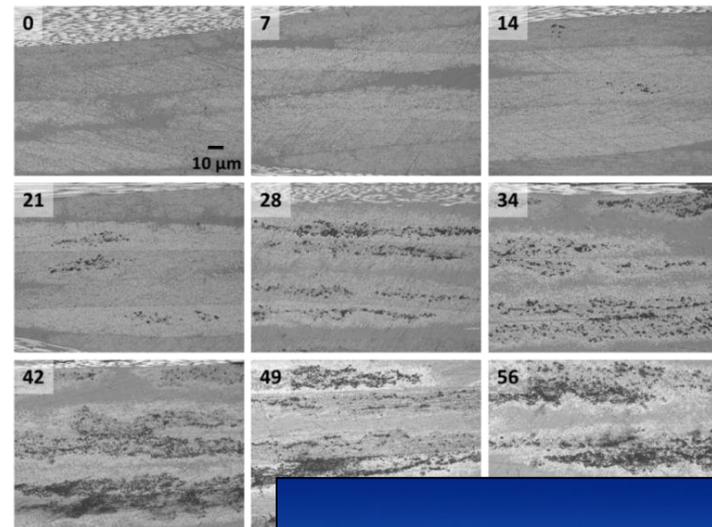
Develop effective fabrication processes for composite materials and support Airbus manufacturing R&D.

### Benefits to Sponsor

- Long-term relationship with USC
- International collaborations
- Ability to direct research

### Benefits to USC

- Long-term funding
- Stability for PhD students
- Industrial guidance

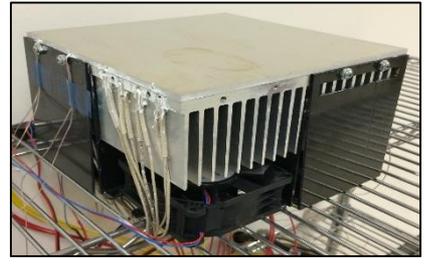
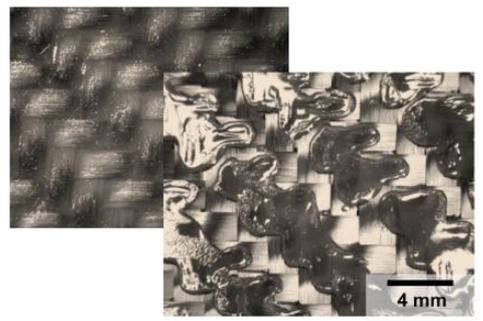


# Case Study 3: NSF-G8 Project and IAB



## Sustainable Manufacturing Using Out-of-Autoclave Prepregs

Advisors: Boeing, Northrop Grumman, Lockheed, Airbus...  
Duration: Three years (based on NSF grant)



**Objective**  
Improve manufacturing efficiency for composite materials through fundamental study and applied engineering.

**Benefits to USC**

- Material support
- Industrial guidance
- Follow-up funded projects

**Benefits to IAB**

- Fundamental research
- Access to infrastructure
- Follow-up funded projects



# Key Considerations

- University-based research can **complement** the R&D carried out in traditional engineering companies.
  
- Several **mechanisms** are available:
  - Funded projects
  - Collaborative proposals for external funding
  - Consortia and long-term strategic partnerships
  
- Many perceived issues are **solvable**:
  - Intellectual property
  - Long-distance collaborations
  - Export controls
  
- University research can be **cost-effective**.



# Contact Information



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