Composites Workshop Questionnaire, October 21, 2016

1. What types of composite materials do you study in your research (i.e. metal matrix composites, polymer matrix composites, continuous fiber, etc.)?

(10) Polymer matrix composites, nonwoven fiber composites
(1) Cementitious matrix composites
(2) MMC
(2) CFRP, polymer matrix carbon fiber (various multilayer and woven configurations)
(1) Composite laminates
(2) Ceramic composites
(2) Carbon Nanotubes, Cnt based, non-woven
(2) Biomass based polymer composites, Bio materials
(1) Textile fabrics as reinforcement structures
(1) polymer adhesive bonded joints
(1) metal-ceramic laminates

2. What aspect of composites research is your focus?

Characterization
- Electrical characterization and its relationship to the underlying structure. This can be useful to characterize all types of composite materials not just those that are used in electronic applications.
- Processing/additive manufacturing and characterization
- Material characterization
- Multi functionality
- Every dissipation / absorption
- Mechanical behavior- deformation degradation and failure mechanisms;
- Damage;
- Impact response
- Viscoelastic behavior
- Large scale systems testing and evaluation

Materials/structure
- Textile fabrics
- Textile fibers, carbon fibers, multifunctional fibers, Nano composites
- Biomass based films and fibers
- Hierarchical structure
- Change of molecular level internal structure as a function of thermodynamic conditions

Processing
- Consolidation by resin infusion and injection molding
- Processing

Applications
- Infrastructure applications
- Healthcare
- Modeling
3. Considering your current composite research and that which occurred in the last five years, would you classify your composite research as single-investigator or collaborative?

(2) I have done lots of work as a single investigator but I also have several collaborations ongoing.

(8) Collaborative

(2) A mix of both. Recently more single investigator. Would much prefer a more collaborative approach.

(3) Single investigator

(1) We have published research with number of industry colleagues at academic intuitions and from government libraries.

4. What type of support could be provided that would remove barriers in your composites research?

Funding/fellowships/access to industry
- Obviously some sort of funding so more students can be trained to do the very detailed analysis that only my group can do.
- $$$
- Student fellowships
- Direct access to funding agencies and industrial partners for funding
- Ways to identify/target industry clients/partners who have problems (basic & applied)
- Funding to allow collaborative research with other professors in GT.
- More directed workshops and/or lunch meetings to create greater awareness of research activities, funding and collaboration opportunities
- Invite DoD and government program managers to make them aware of our activities
- Seed funding for small projects that can grow into larger proposals

Facilities
- Better/more formalized access to working groups of faculty performing ideation on next level composites research initiatives.
- Using the equipment in other groups (where is funding to support it?)
- There is no space for composite R&D.

Various
- None
- I think I have no interest barrier if the interest is showed.
- We can take materials all the way from Nano material synthesis to fiber manufacturing to composite manufacturing and testing. New manufacturing methods such as additive manufacturing can and should be employed.
5. Considering Georgia Tech’s composites community, what themes/strengths can be used to assemble a critical mass of researchers to pursue center-level external funding?

- I think the workshop was a great idea and I learned about some new ways to interact with people and where to locate information.
- Broad expertise
- Strong educational program
- I am not sure I have the perspective to answer this question appropriately, but I am very motivated to be part of the critical mass
- Multi-function
- Aero/ Auto
- Combination fabrication, experiment, modeling and simulations
- Nano materials & sensors & composite
- I can provide multi scaled simulations and modeling to investigate the structures and properties of materials system in the proposal, in order to characterize the mechanisms.
- Functional fibers and films are the most strength of GT.
- Bio materials
- Bio inspired design of materials
- Full life cycle/product cycle engineering (conception, validation and production) instead of a “basic research” focus
- Utilize our strengths in fibers, polymer composites, and renewable materials, along with processing expertise targeted towards revolutionary new products.

6. What challenges will this community encounter when pursuing external funding?

- We are not familiar with each other’s expertise
- Identify real world problems and seek solutions (balance between basic research and applications)
- Applications
- Promote GT composite capabilities (not individuals) and GT as a thought leader and create funding opportunities
- Select interesting topics and materials to work on that are more fundable
- Identify funding sources for bio inspired designs, biometrics, bionics
- Not sufficient support from the state of Georgia
- Lack of a known composites industry ecosystem, competition from other universities with well-known composites research programs, increased competition to secure funding through the IACMI.
Answers as received

I think we have made tremendous progress but we still need to truly open the field up to all researchers and given them a place to demonstrate their capabilities. I am sure no one truly understands what my research can really do for them besides give them the electrical conductivity of their composites.

Balancing basic research ideas/goals with the need to find solutions to applied/real world problems in a cost effective manner.

Application – Emphasis

The community should take a more proactive strategy to promote GT composite capabilities (not individuals) and create funding opportunities. Promote GT as a thought leader.

I don’t anticipate any serious challenges internally. Only thing we need is to select interesting topics and materials that offer more profitability for funding.

Need to identify funding sources for bio inspired designs, biometrics, bionics

Sufficient support from the State of Georgia

7. Other Comments
   • Thanks for the opportunity to attend. I look forward to participating in any follow-up activities.
   • MFGT (14th st)
   • Monthly presentation from different groups will help.
   • There is an opportunity to develop professional master’s degree program in composites related field.
   • Given the increasing need of composites in aerospace, automotive, energy and other industries – such a program should be very successful.