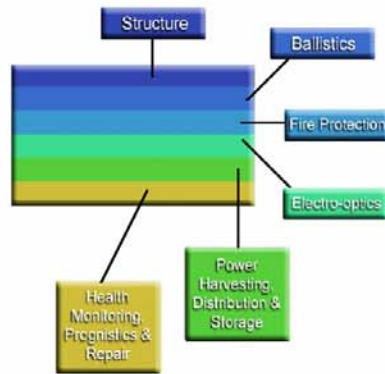


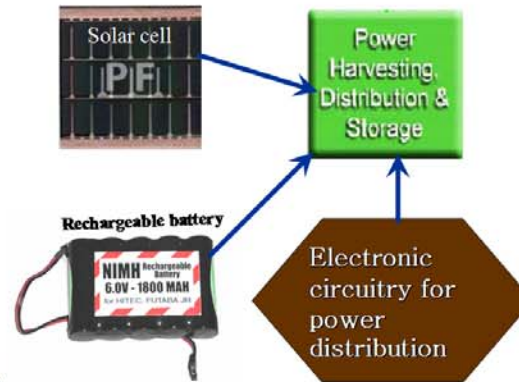
# PRELIMINARY STUDY: MULTI-FUNCTIONAL COMPOSITES, AN ENABLING MATERIAL FOR THE FUTURE

**S. Hazra (PD), S. Yarlagadda, and D. Heider**  
University of Delaware • Center for Composite Materials

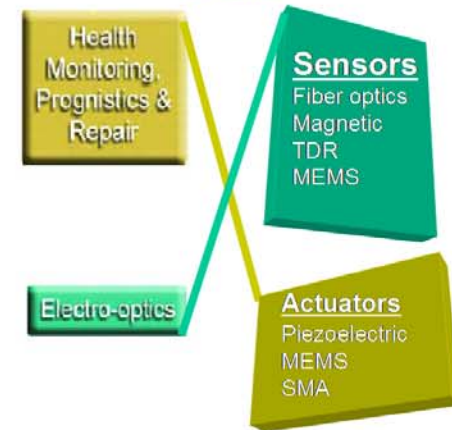
### Composites Enable Unique Multi-Functional Materials



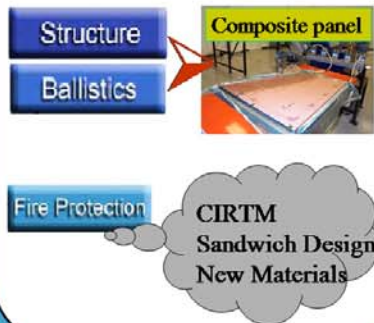
### Case Study: Power Harvesting and Storage



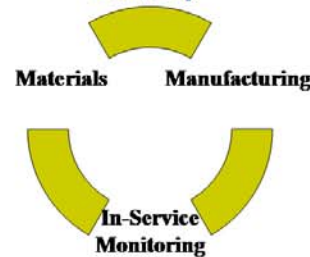
### Incorporation of Health-Monitoring and Prognostics Systems



### Composite Manufacturing



### Integration of Materials, Manufacturing and In-Service Performance is Key to Successful Scale-up



### Remote Monitoring System



### Composite Demonstration System

- On-Going Work:**
- Integrated Solar Panels as Surface Layer
  - Batteries and wireless system integrated into core Material
  - Sensors and Actuators for strain and vibration measurements
  - Fiber optic and conductive fibers for communication links

- Future Work:**
- Integration of other power sources
  - Integration of MEMS systems
  - Passive – Sensors and Actuators
  - Active Devices

### Acknowledgements

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