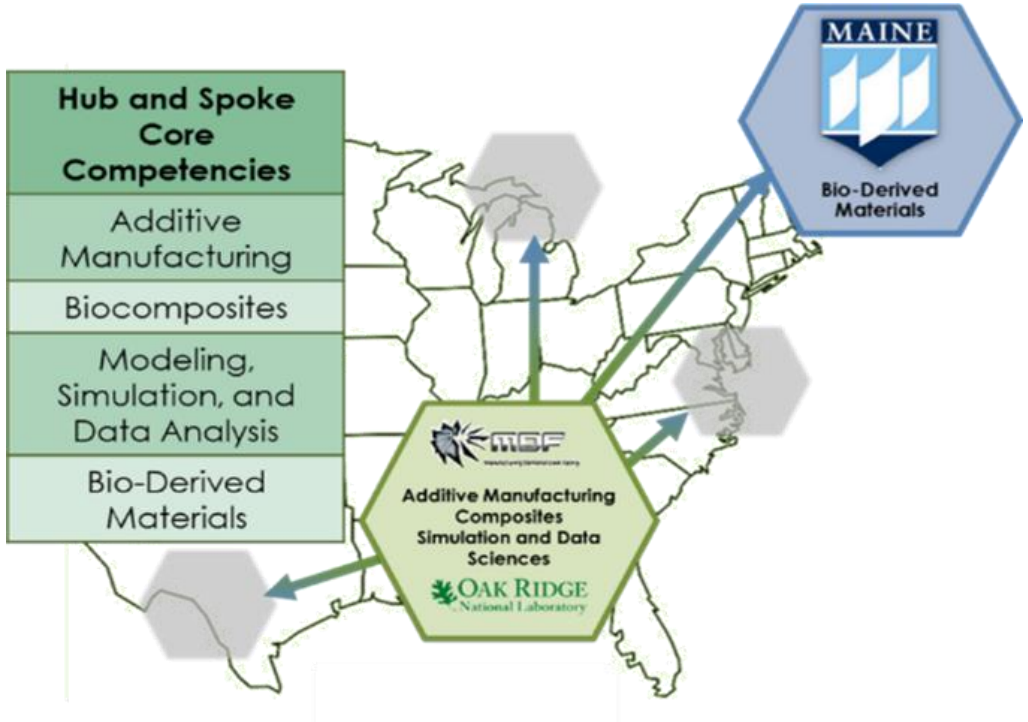
Introduction to Technical Collaborations within the Oak Ridge National Laboratory and University of Maine's Hub and Spoke Program

University of Maine
Process Development Center
4th Annual Cellulose Nanomaterials Researchers Forum
Greg Simms
August 23, 2023

The Hub and Spoke Program

- Accelerating the commercialization of low embodied energy, functional bio-based materials and de-risking the adoption of next generation manufacturing
- 80+ Researchers
- 17 Graduate & 112 Undergraduate Students
- 40+ Published Articles, 5 covers articles
- Awards: SME 2023 AM Case Study, CAMX 2021 Green Design, R&D100 2020
- 20 active technical collaborations and 35 Industrial Partners



Industry Technology Collaborations

Explore

- Opportunity for industry to discover and apply new manufacturing technologies

Engage

- Work with manufacturing staff to develop scope of work

Execute

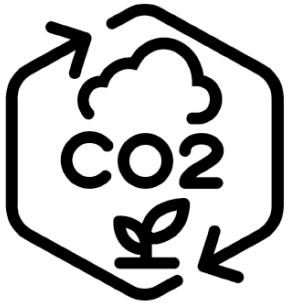
- Phase 1 $40K
  Phase 2 $200K
- 1:1 In Kind Contribution

Bio-based Materials, Buildings, Packaging, Automotive, Marine, Off-Shore Wind Energy

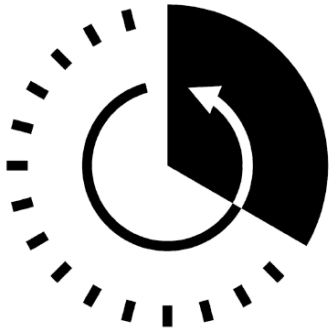
Criteria

- Short-term, focused technical challenges
- **Novel Research,** within program thrust areas
- Lead to the **Decarbonization** of an industrial process or product
- ***Commercially Viable***
- Company must be an **Equal Collaborator** and ***US Manufacturing or Headquarters***

Technical Collaboration Success Metrics

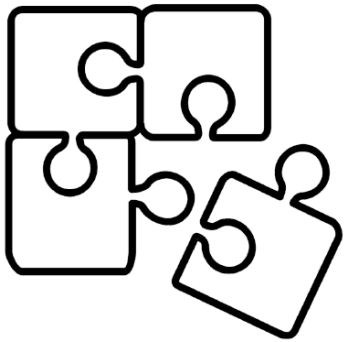


Embodied Carbon



Time Reduction

Cost Neutral



System Integration & Registration

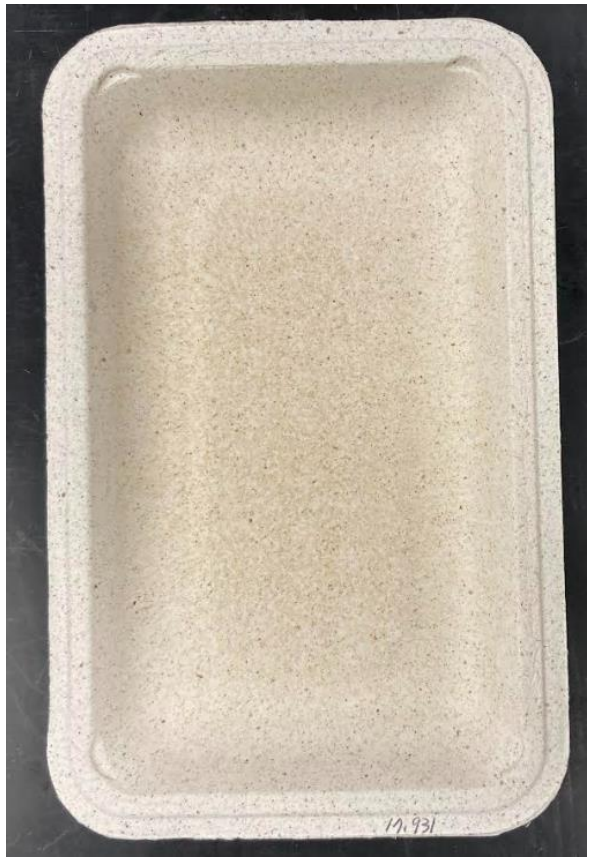
Example Projects using Wood Filled Bio-composites

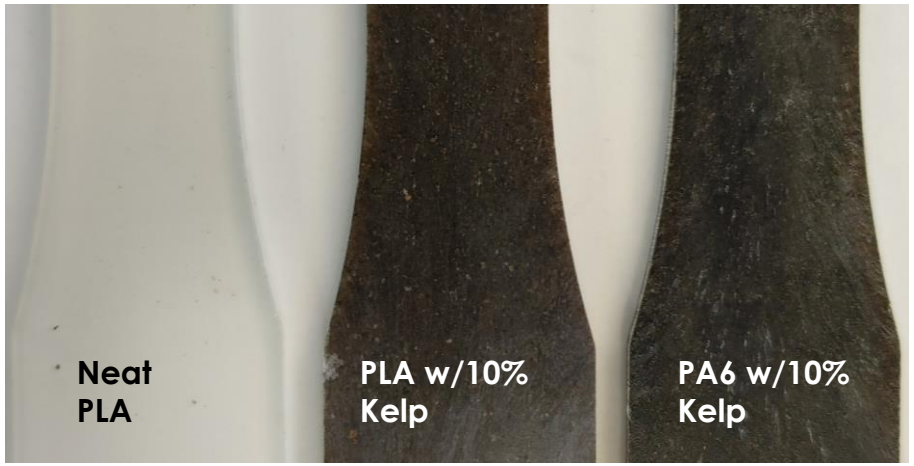
- Single Use Plastic Packaging
  - 1 Product – Displacing 120tons/yr of petro-base plastics

- R.A.S Grow Beds for Oyster Aquaculture
  - Unique design, 3D printed, replaces traditional concrete and glass tanks

- 3D Printed Floor Assembly
  - Unique design, 3D printed, displacing tradition materials, integrating systems

Example Projects Exploring Kelp for Packaging





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