

IACMI Circular Economy Working Group Report Out

Marriott Knoxville Downtown
Fulton/Armstrong

June 21, 2023

ORNL is managed by UT-Battelle, LLC for the US Department of Energy

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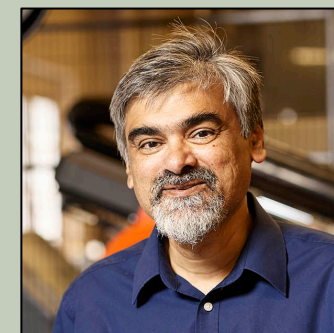
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Looking to join? E-mail khodin@iacmi.org

8 Years of IACMI Composite Recycling

Lead the way to a circular economy for composites

2016



Composite Recycling Technology Center Port Angeles, WA opening and MOU signing ceremony

2016 → 2018



IACMI Composite Recycling Roadmapping Workshops

2015 → 2023



Participate conference panels, support various CAMX, SAMPE, ACMA Sustainability Coalition 2015-2020

2015 → 2023



Published journal papers and selected for cover page of "Recycling" journal for June 2019

2015



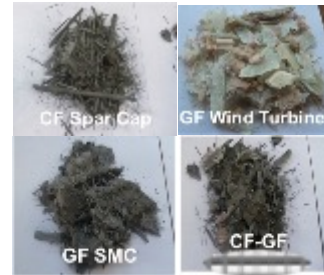
IACMI and ACMA have entered into a partnership agreement.

2016



Manufacturing Thermoplastic Wind Turbine Blade Wind Technology Center-NREL

2015 → 2020



8 IACMI Recycling Projects with total of 30 industrial collaborators

2015 → 2020



Numerous engineer interns trained in composite recycling

2019



IACMI SURF Facility injection molded the automotive fender using recycled carbon fiber reinforced PA6

Related industrial partners



IACMI Circular Economy Working Group

June 2023 Discussion Summary

What we know:

IACMI renewal funding will help enable the composites industry to meet President Biden's goal to reach net zero manufacturing by 2050

What we need:

High impact R&D projects to:

- Lower CO₂ intensity in manufacturing
- Increase yield, reduce landfilling, and minimize waste
- Enable net zero manufacturing
- Increase product lifetime and demonstrate resiliency



Re-Frame “Design for Sustainability”

Note: these can fit into more than 1 category

Enable the use of recyclable and/or renewable materials

Increase product resiliency and/or service life by 30%

Serve multiple markets (e.g., auto, wind, construction, carbon storage)

Design bolt-free assemblies for minimal effort disassembly

Significantly improve surface finish of products without re-work or coating

Reduce process cycle time by 30%

Reduce process scrap by 50%

Improve strength and/or stiffness to weight ratio of composites (i.e., lightweighting) by 30% without increasing cost

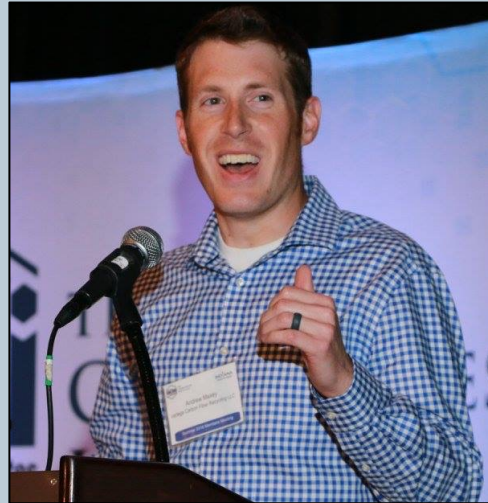


Panel Discussion



David Morgan

Carbon Rivers



Andrew Maxey

Vartega



Dr. Susan MacKay

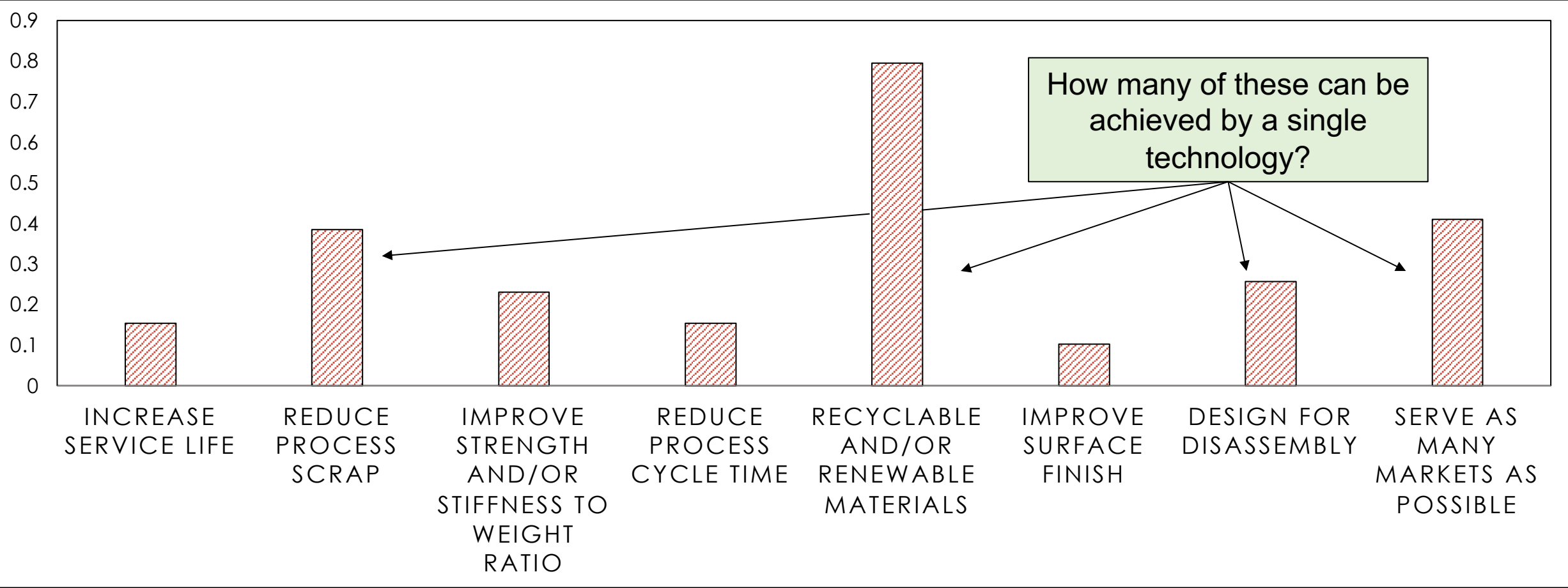
University of Maine



Ed Pilpel

Sust. Composites

Pre-Meeting Poll Suggests D4S Topics of Highest Interest



Enable A More Consistent Recycled Supply Chain

New & Cost-Effective Recycling Technologies

Better Terminology and Standards

Question 1:

What high impact, 12-month projects could IACMI do?

Question 2:

What is IACMI's role in R&D in this area?

Cost and GHG models/database for virgin, recycled, and recyclable materials

Projects should be sensitive to I.P., but sharable

Use case studies to motivate/validate models

Standardized template/process needed

Example case studies:

1. Advanced wind turbine blade recycling
 2. Recycled materials used in building/construction applications
 3. Use of additives to enhance recycled materials
 4. Use of next-generation (renewable, recyclable, etc.) materials
- Secondary market must be understood as part of project
 - Lifecycle and technoeconomic analysis key components
 - Marketing will be critical (student engagement, advertisements)
 - Critical to collaborate with other partner institutions

Submit Anonymous Feedback on Scope and Approach Here!!!



Contact Us



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