

Structural Biobased Composites

design, development, durability





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WOODS INSTITUTE
FOR THE ENVIRONMENT
STANFORD UNIVERSITY

Outline

-  Meet The Team Leaders
-  Envisioned Closed-Loop Lifecycle
-  My Role: Structural Engineering
-  Meet the Rest of the Team

Meet the Team Leaders

INTERDISCIPLINARY TEAM
@ STANFORD



CRAIG CRIDDLE
Environmental
Engineering

Microbiology
Wastewater



CURTIS FRANK
Chemical
Engineering

Polymer Chemistry
Polymer Interface



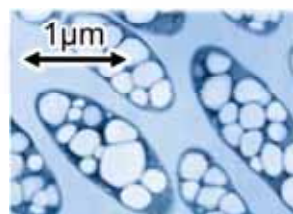
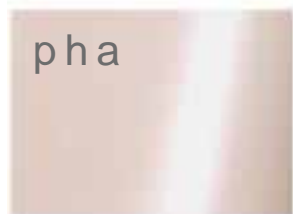
SARAH BILLINGTON
Structural
Engineering

Materials Testing
Cement-Based Composites

biobased composites

Envisioned Closed-Loop Lifecycle

genesis + manufacture



pha biopolymer:

harvested from bacteria
anaerobically biodegrades rapidly
good mechanical properties
melt properties good for composite processing

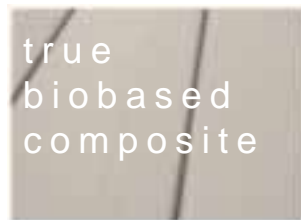
carbon-source feedstock:

sugars (glucose, sucrose) typically from corn
methane CH_4



Envisioned Closed-Loop Lifecycle

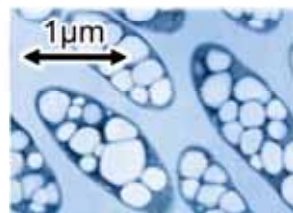
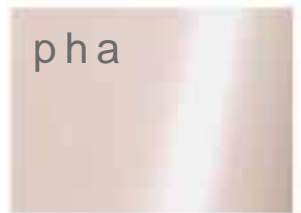
genesis + manufacture



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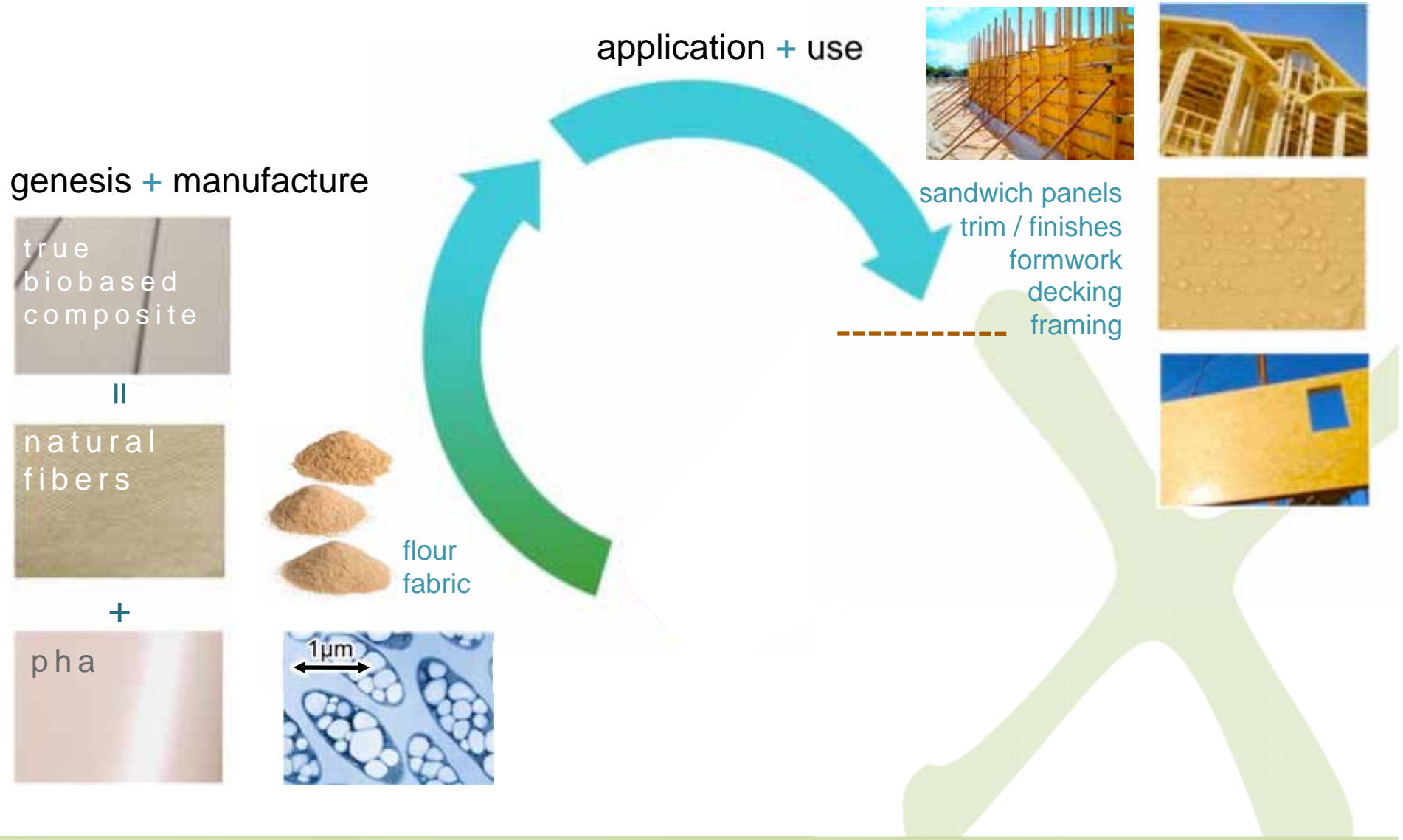
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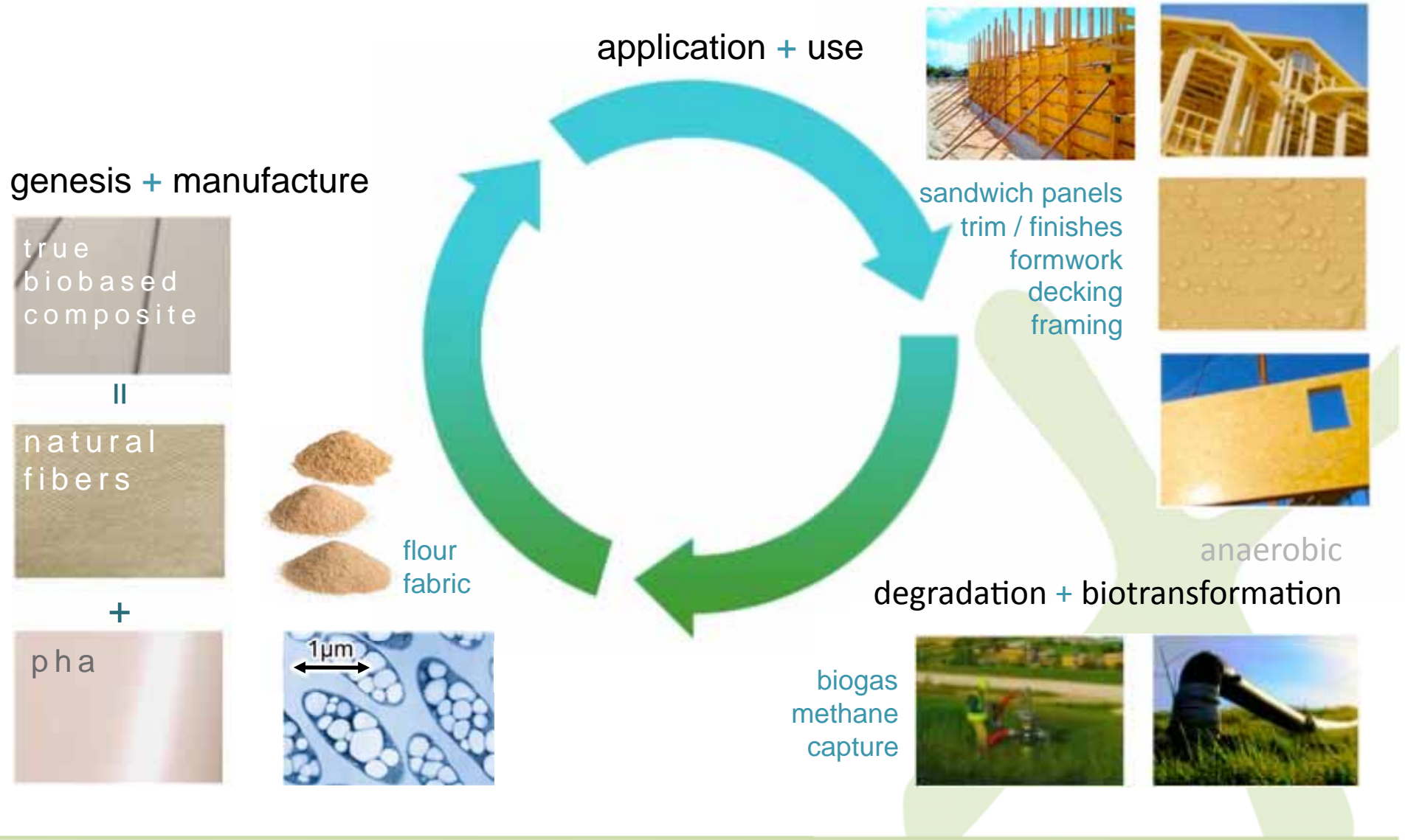
natural fibers:

- low cost
- availability
- biodegradability
- stiffness / strength
- waste product

Envisioned Closed-Loop Lifecycle



Envisioned Closed-Loop Lifecycle

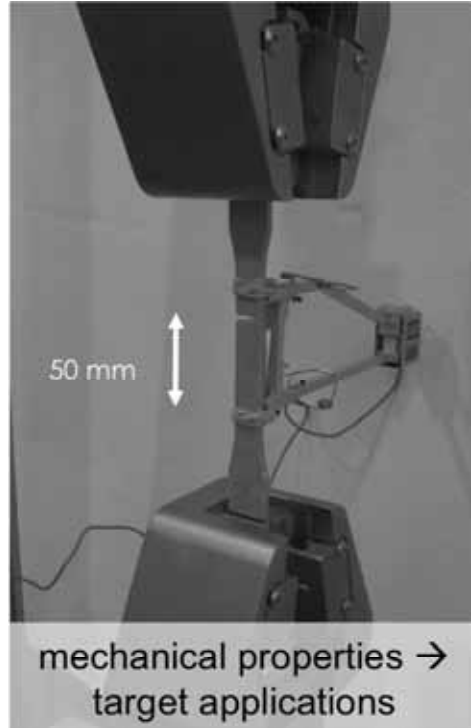


My Role: Structural Engineering

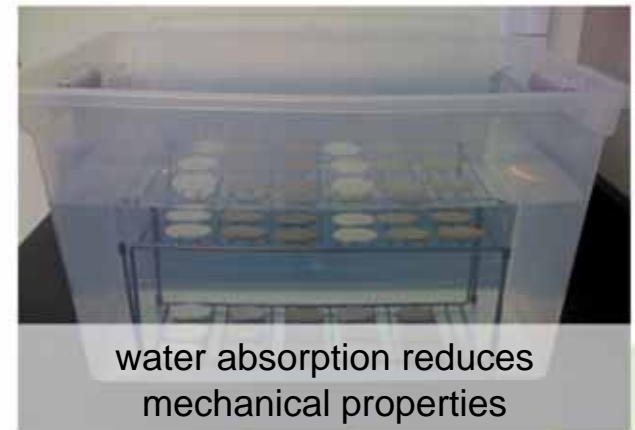
composite fabrication



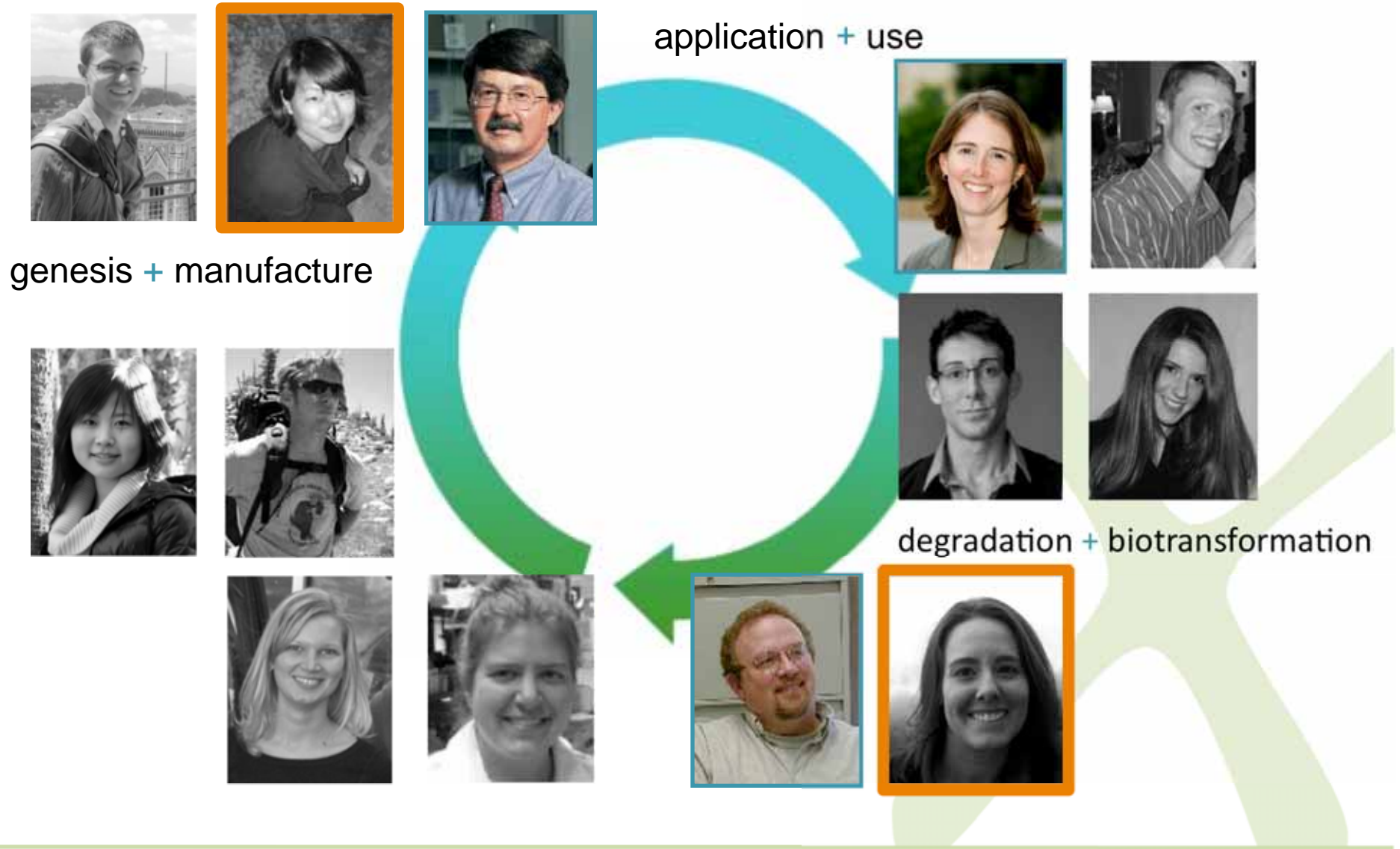
materials testing



material durability testing



Meet the Rest of the Team



Questions?



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