



**NSF Convergence Accelerator** funds transdisciplinary teams through convergence research and innovation processes to stimulate innovative idea sharing and development of sustainable solutions to solve societal challenges.

## IDEATION (DCL/RFI, WORKSHOPS):

Selected by gathering input from the community. Identified topics must meet a societal need at scale, be built upon foundational research, and be suitable for a multidisciplinary, convergence research approach.

### PHASE I (PLANNING)

9 months

Up to **\$750,000**

### PHASE II (IMPLEMENTATION)

24 months

Up to **\$5 Million**

CHIPS and  
Science Act  
2022

Opportunity available to:



Academia



Business & Industry



Governments



Nonprofits



# NSF Convergence Accelerator Portfolio



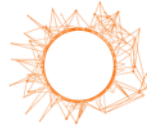
## Track A

Open Knowledge Networks



## Track B

AI and the Future of Work



## Track C

Quantum Technology



## Track D

AI-Innovation Data Sharing & Modeling



## Track E

Networked Blue Economy



## Track F

Trust & Authenticity in Communication Systems

**2019 COHORT**  
Complete

**2020 COHORT**  
Phase 2

**2021 COHORT**  
Phase 2



## Track G

Securely Operating Through 5G Infrastructure



## Track H

Enhancing Opportunities for Persons with Disabilities



## Track I

Sustainable Materials for Global Challenges



## Track J

Food & Nutrition Security



## Track K

Equitable Water Solutions



## Track L

Real-World Chemical Sensing Applications



## Track M

Bio-Inspired Design Innovations

**2022 COHORT**  
Phase 1

**2023 COHORT**  
Phase 1



# Why is this topic so important?

- <https://www.nationalgeographic.com/environment/article/human-made-materials-now-equal-weight-of-all-life-on-earth>, December 9, 2020.
- Elhacham, E., Ben-Uri, L., Grozovski, J. *et al.* Global human-made mass exceeds all living biomass. *Nature* **588**, 442–444 (2020). <https://doi.org/10.1038/s41586-020-3010-5>
- The fundamental links between climate change and marine plastic pollution – ScienceDirect, Ford et al. *Science of the Total Environment*, Volume 806, Part 1, 1 February 2022, 150392, “The fundamental links between climate change and marine plastic pollution.”



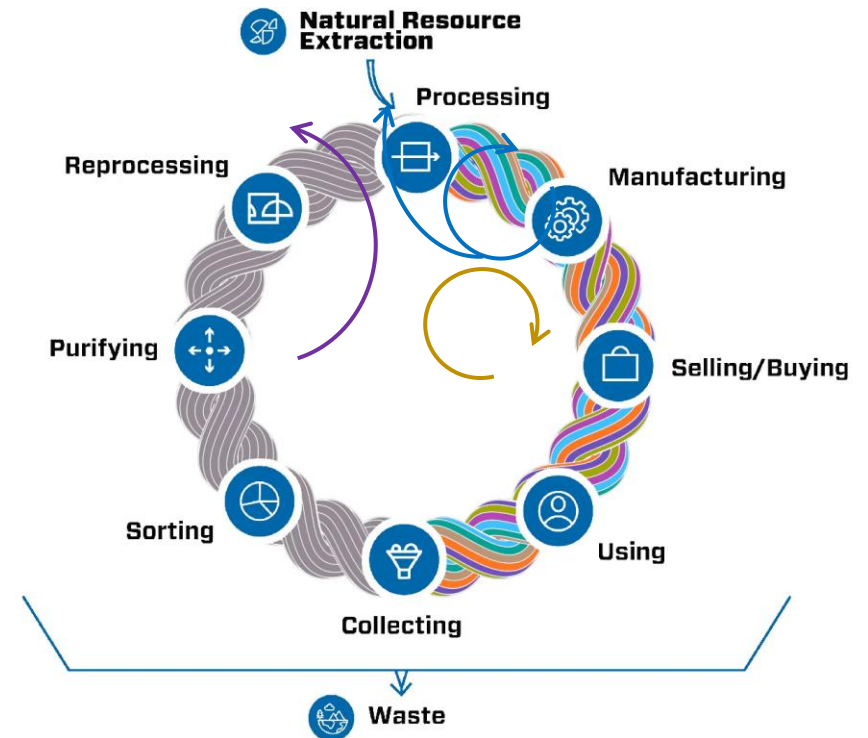
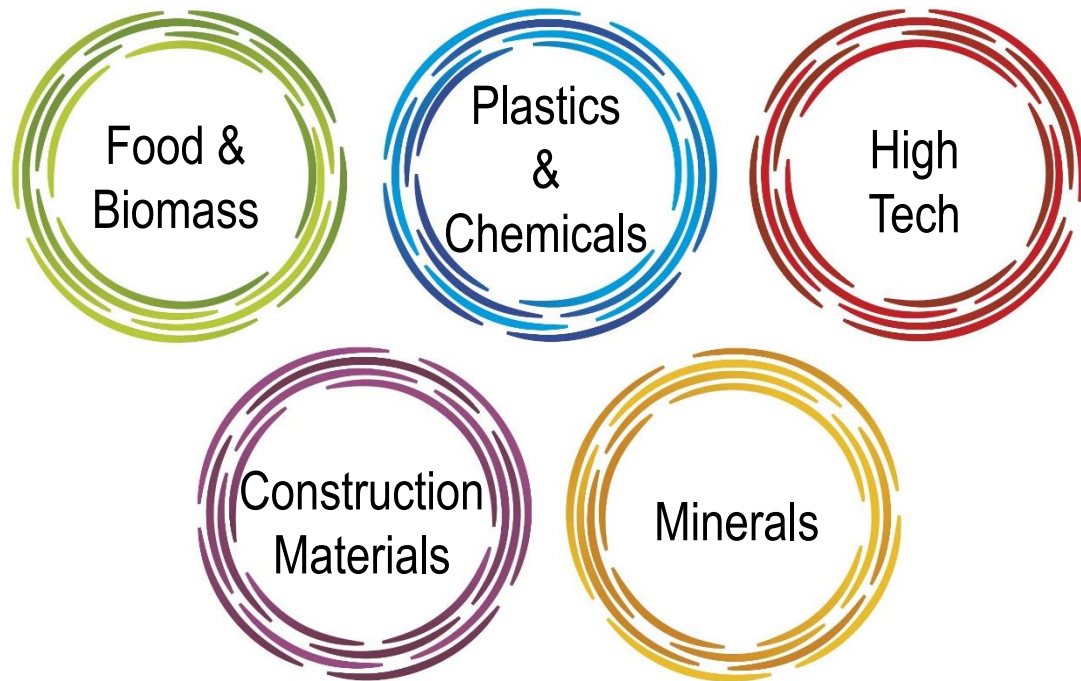
# Why is this topic so important NOW?



**Nairobi, 02 March 2022** – Heads of State, Ministers of environment and other representatives from UN Member States endorsed a historic resolution at the UN Environment Assembly (UNEA-5) today in Nairobi to End Plastic Pollution and forge an international legally binding agreement by 2024. The resolution addresses the full lifecycle of plastic, including its production, design and disposal.



Our systems are half-built...



*Keeping atoms and molecules inside the economy, producing value*



NSF  
Convergence  
Accelerator

*Part of an Integrated Approach to Achieving a Circular Economy that Encourages both Economic Development and Environmental Protection and Justice*



# NSF ADVANCES THE CIRCULAR ECONOMY

**Creating sustainable materials and products critical to our future.**

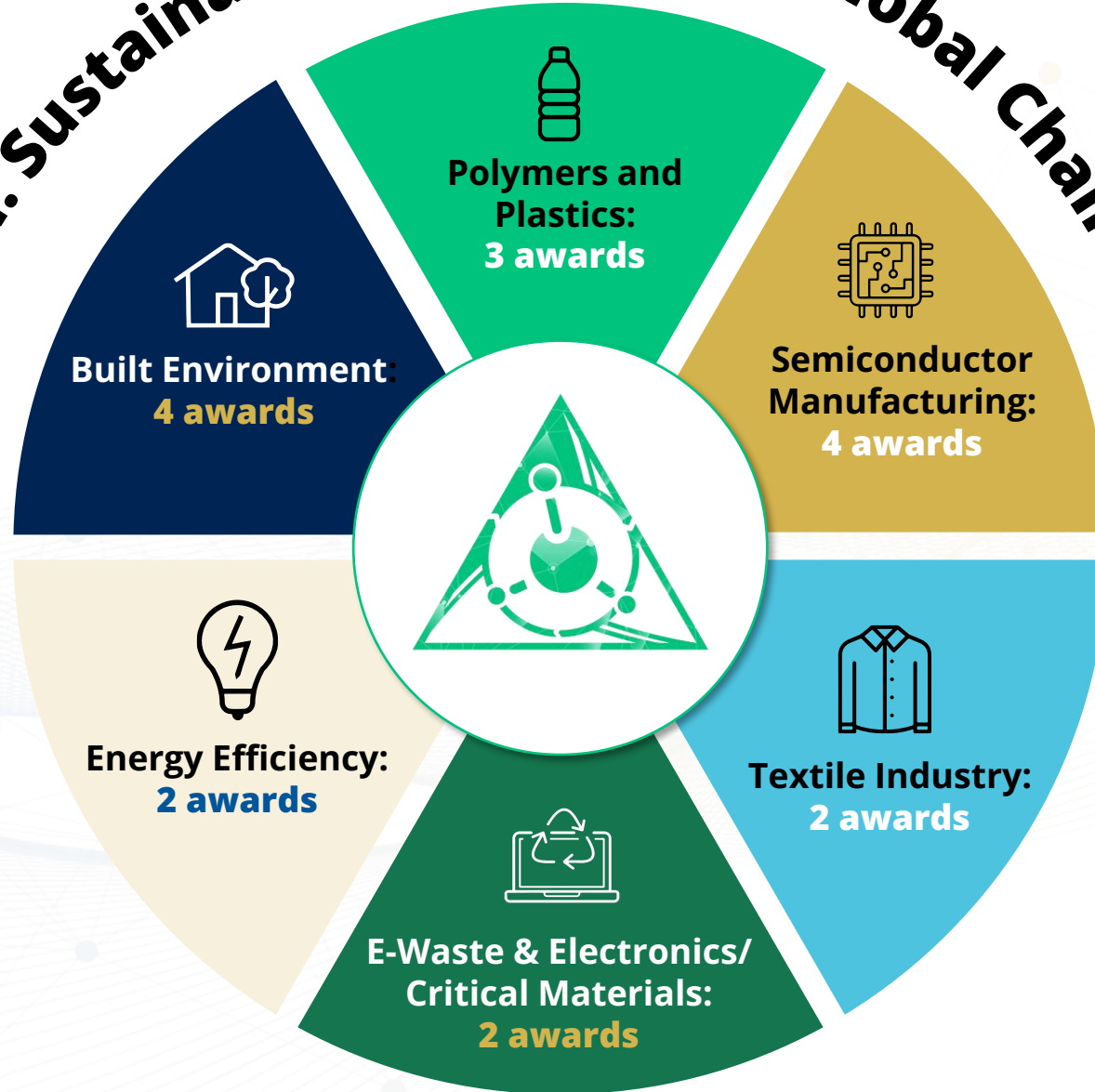
- \$12.25 million investment
- 17 Phase 1 convergent teams
- Australia's CSIRO has partnered with NSF and is funding Australian researchers on two U.S. projects

<https://beta.nsf.gov/news/nsf-advances-sustainable-materials-solutions>

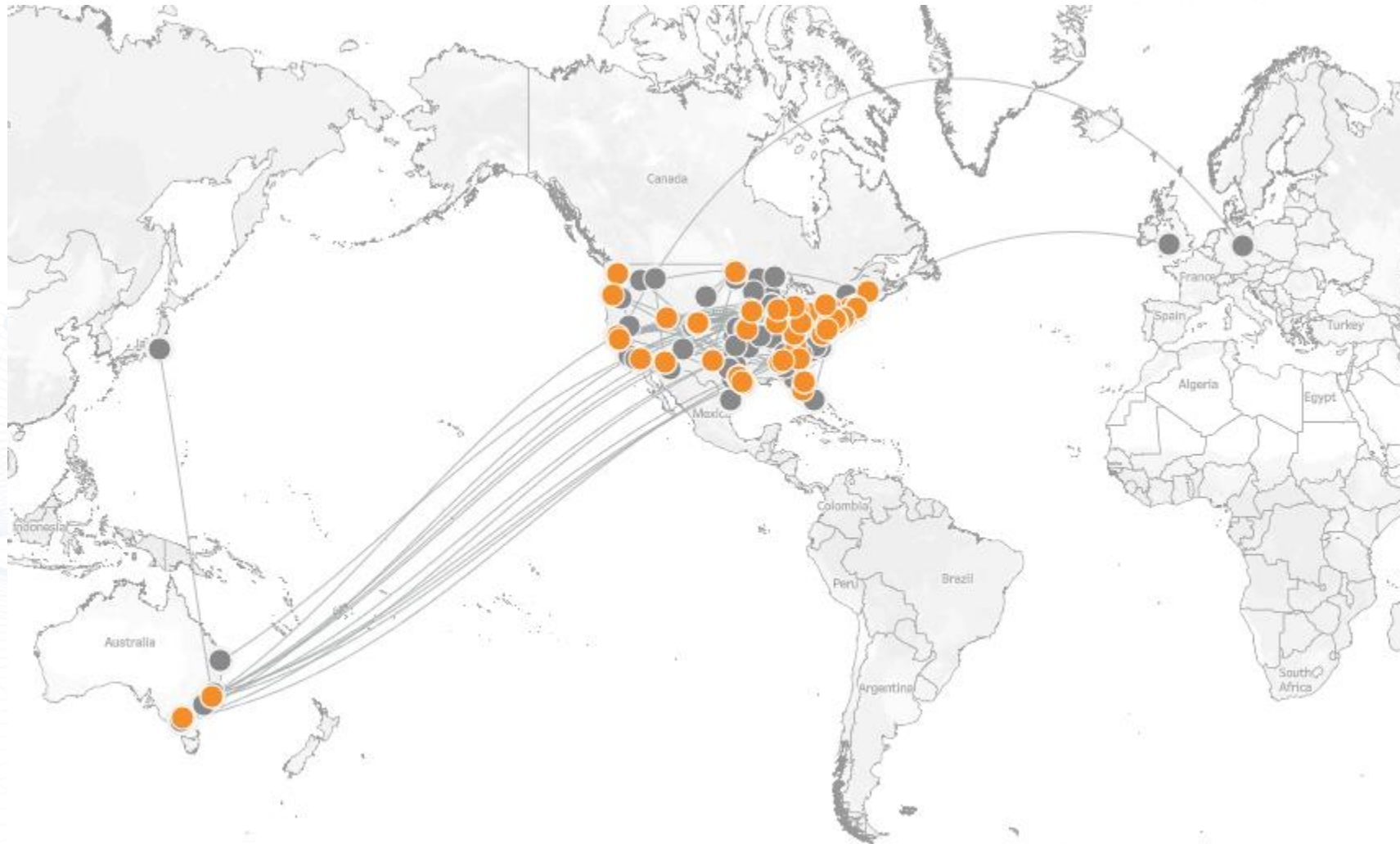
Program Director, Linda Molnar PhD  
lmolnar@nsf.gov



# Track I: Sustainable Materials for Global Challenges

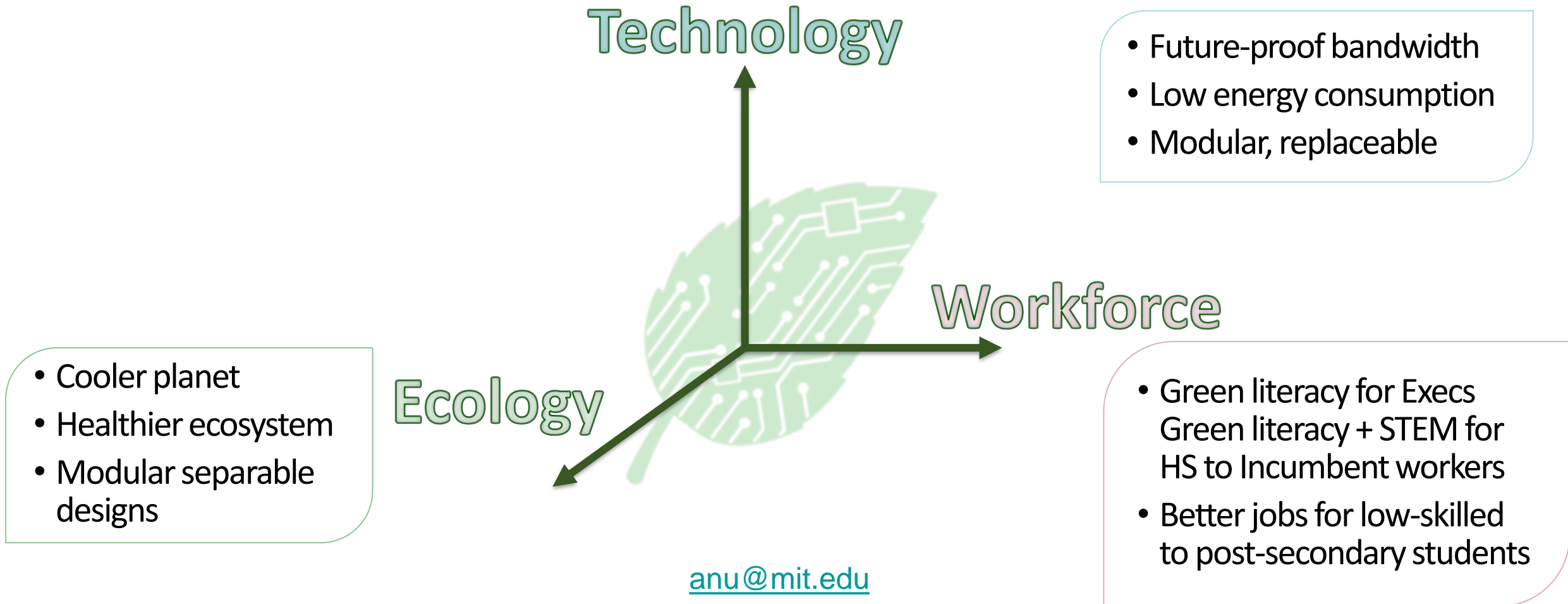


# Track I Phase 1 Awards





# FUTUR-IC: Alliance to make the Semiconductor Supply Chain Sustainable by co-optimizing across Technology, Ecology, and Workforce

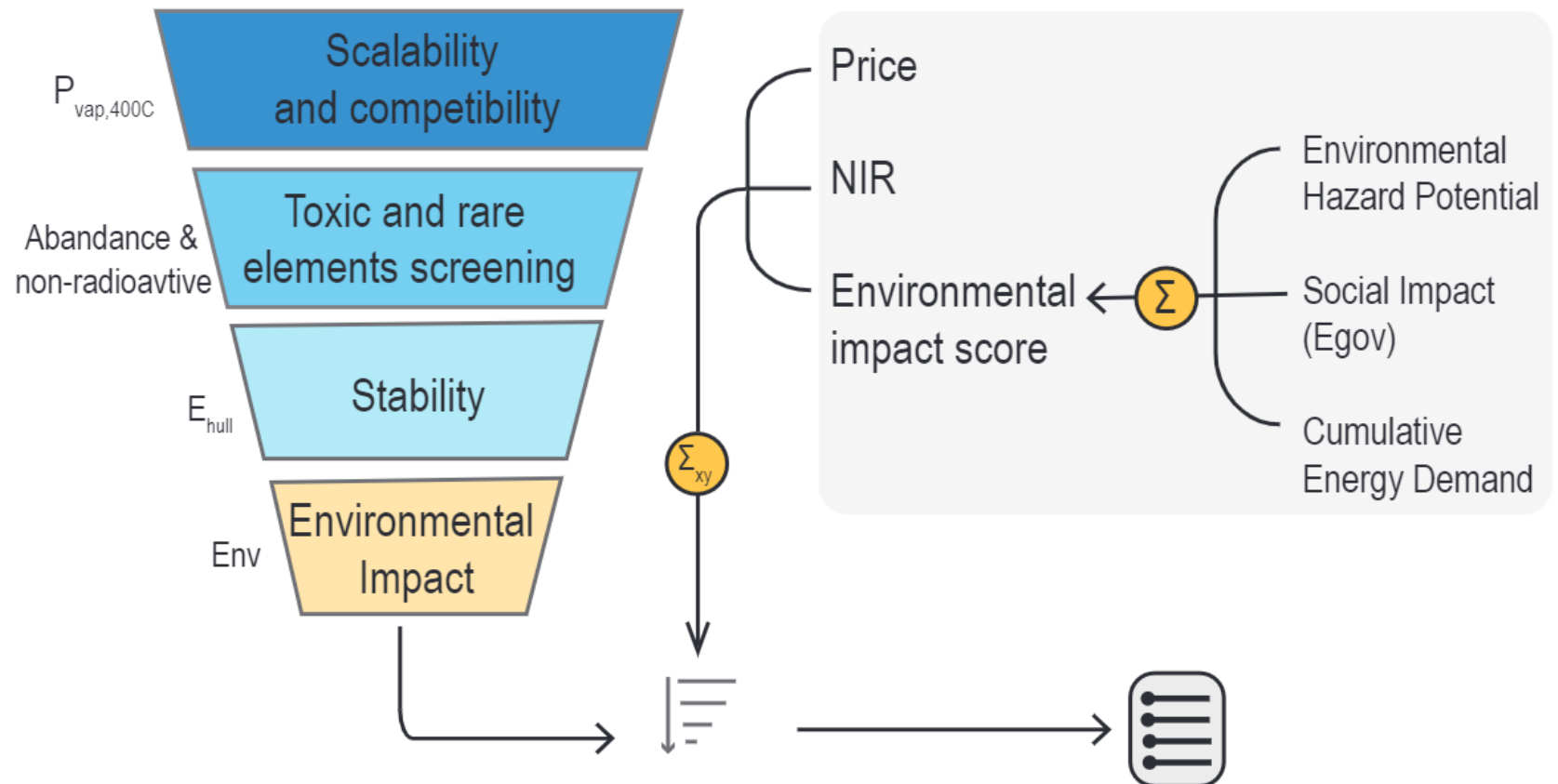


*This work is supported by NSF Convergence Accelerator Track I: Award Number ITE-2236093 and Award Number ITE-2345076*

# Importance of sustainability aspects for future functional and quantum materials

PI: Mingda Li, MIT  
NSF Award #2345084

- Hierarchical down selection for 20,000 topological materials
- Scoring at the end conspiring the price, net important resilience (NIR), and environmental impact (ENV)



# PFACTS

Faster Solutions for Forever Chemicals

Award 49100424C0005

## Identifying PFAS & Assessing Lifecycle Chemical Hazards

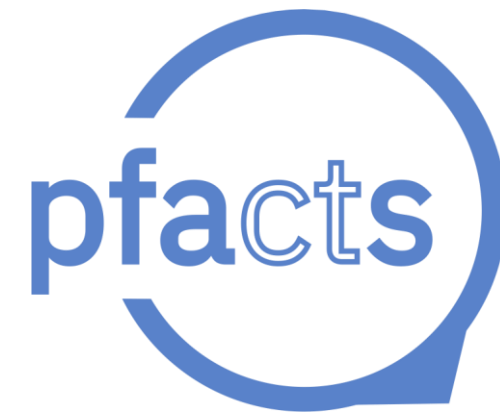
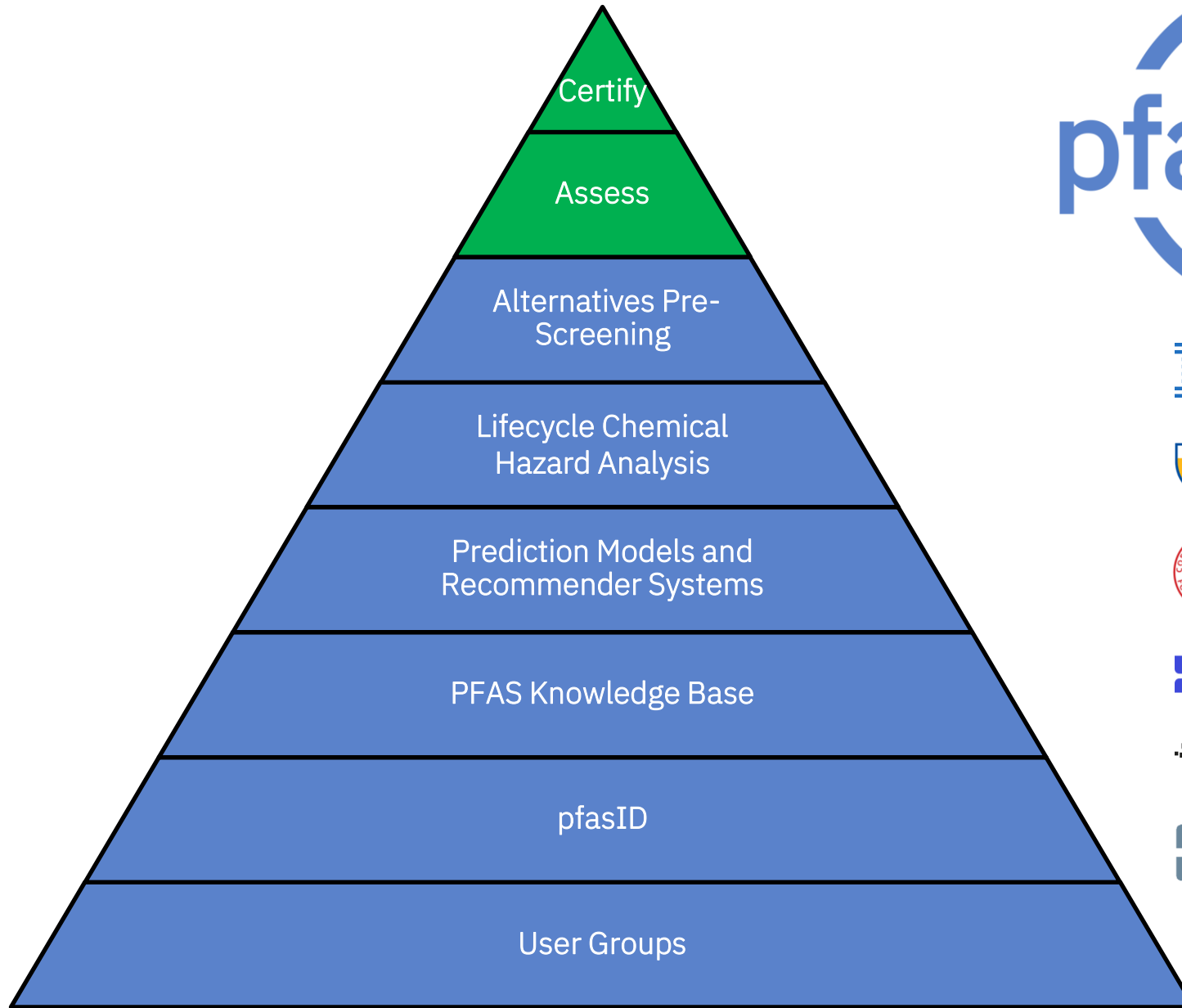
AI models for hazard and transformation prediction

## Avoiding Regrettable Substitutions

AI-assisted alternatives pre-screening

## Preventing Release into the Environment

Capture material recommenders



NSF Convergence Accelerator

**Non-funded Collaborators:**

SIA PFAS Consortium  
SEMI

Apple  
Google

HP  
Sonos

Assoc. for the Adv. of  
Alternatives Assessment (A4)

# Synergistic Activities/Events Driving CE Adoption

**Nairobi, 02 March 2022** –historic resolution at the UN Environment Assembly (UNEA-5) in to [End Plastic Pollution](#) and forge an international legally binding agreement by 2024.

October 2022 US-EU JCG - Circular Economy topic added to agenda

November 2022 US Net Zero Game Changers Group – <https://www.whitehouse.gov/briefing-room/statements-releases/2022/11/04/fact-sheet-biden-harris-administration-makes-historic-investment-in-americas-national-labs-announces-net-zero-game-changers-initiative/>, Industrial CE is top 5

December 2022 Convergence Accelerator Circular Economy Track launched, <https://new.nsf.gov/news/nsf-advances-sustainable-materials-solutions>

January 2023, <https://www.whitehouse.gov/ostp/news-updates/2023/01/19/fact-sheet-biden-harris-administration-releases-national-strategy-to-put-nature-on-the-nations-balance-sheet/>

<https://www.whitehouse.gov/briefing-room/statements-releases/2023/04/21/fact-sheet-president-biden-signs-executive-order-to-revitalize-our-nations-commitment-to-environmental-justice-for-all/>

Announcement by 3M to phase out PFAS by 2025 (\$10.3B in lawsuits), Congressional briefings on PFAS, EPA regulation; Reaction by semiconductor industry – SEMICON West, launch of **SEMI Climate Consortium October 2023, SIPS March 2024, S3**

Greening Government Initiative, <https://www.sustainability.gov/ggi/>.