



MSU School of Packaging

Leadership for Global Challenges



The First Packaging Program

Founded in 1952,
MSU School of
Packaging is the first
packaging program
in the history of high
education.





Proven Record of Success

#1

Ranked #1 in packaging program rankings.

40%

~40% of packaging graduates come from MSU each year.



The only packaging Ph.D. degree offered in the US.

10,000

Conferred over 10,000 degrees since its beginning.



Alumni span industries and global Fortune 500 companies.

18

School of Packaging faculty hold more than 18 patents.

600

Approximately 600 undergraduate and graduate students today.

\$737K

More than \$737,000 in corporate-sponsored research.



Comprehensive Curriculum



Calculus



Physics



Chemistry



Statistics



Plastics



Paper



Metal/Glass



Distribution



Supply
Chain



Design



Software
Tools



Lab Work



Consumer
Design



Automotive



Medical



Food



Sustainability
(LCA)



Global Impact

We teach the teachers.

Our Ph.D. graduates teach at universities around the world.





Continued Investment in the Future



Recently Completed: \$10M Building Renovation





Packaging 2.0



Expand enrollment
to 1000+



Expansion of
world-class labs



Competitive faculty
ratio

Vision: undisputed
global packaging
education leadership

...and doing this on the
strength

of our inclusive,
collaborative culture



Opportunities for Corporate Partnerships



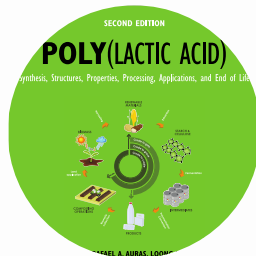
Corporate
Sponsored
Research



Talent
Pipeline



Equipment
Gifts



Technology
Licensing



Cash Gifts



Opportunities for Corporate Partnerships



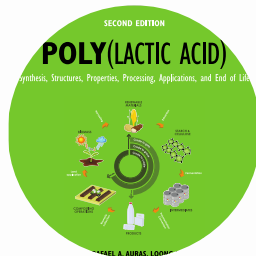
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Corporate Partnerships



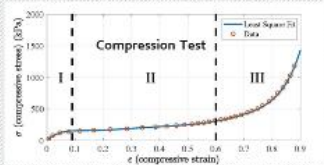
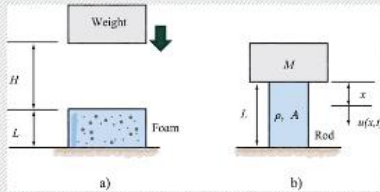


Amin Joodaky

Assistant Professor

Dr. Joodaky's research focuses on shock, vibration and packaging design optimization.

Simulate foam impact



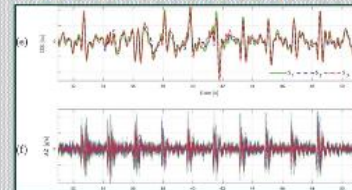
Analytical Mechanics Models:

- Linear $\sigma = E\epsilon$
- Non-linear $\sigma(t) = f\left(\frac{\partial u}{\partial x}, \frac{\partial^2 u}{\partial x^2}\right) = F_1\left(\frac{\partial u}{\partial x}\right) + \sum_{k=2}^K F_k E_k \left(\frac{\partial u}{\partial x}\right)^k + C_D \frac{\partial^2 u}{\partial t \partial x}$

Capture and simulate transportation vibrations



Shaker table





Laura Bix

Professor And Assistant Dean For Teaching, Learning And Academic Analytics

Dr. Bix's research focuses on quantifying the interface between people and packaging (perceptually, cognitively and physically) with the ultimate goal of improving health outcomes.



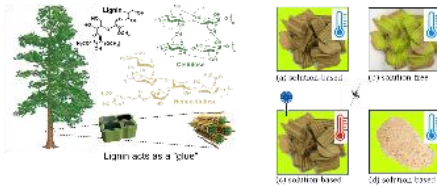


Qiang Yang

Assistant Professor

Dr. Yang's research is in the areas of cellulosic packaging.

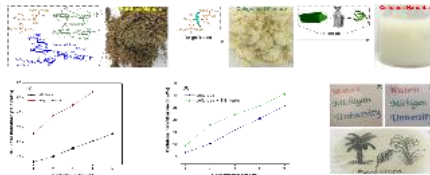
Chemical processing of wood



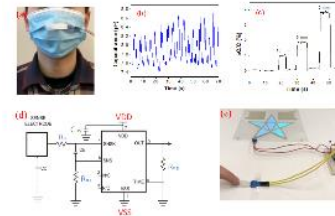
Goals:

- ✓ G1: Reduce energy, capital, and chemical inputs
- ✓ G2: Preserve structures and yields of cellulose, hemicellulose sugars, and lignin.

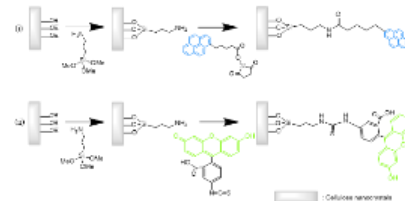
Cellulose nanofiber from cow manure



Porous paper humidity sensor



Functionalization of Cellulose





Muhammad Rabnawaz

Associate Professor

Dr. Rabnawaz's research focuses on the development of new biodegradable polymers from renewable resources, high-barrier materials, sustainable adhesives, sorbents for PFAS treatment, smart coatings, and plastic recycling.



Recycle mixed plastics



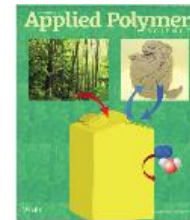
Multi-layer recyclable plastic



PET recycling



Thermally sealable paper bag (replace plastic bags)



Non-plastic paper coatings



Eva Almenar

Professor

[Dr. Almenar's](#) research focuses on developing packaging materials and technologies with an emphasis on active packaging for the delivery of high-quality and safe food. Most of this novel packaging is made from renewable feedstocks, including by-products from processed food

Studies on the use of
different agricultural
wastes for food
packaging applications



Study on e-commerce food
and beverage packaging

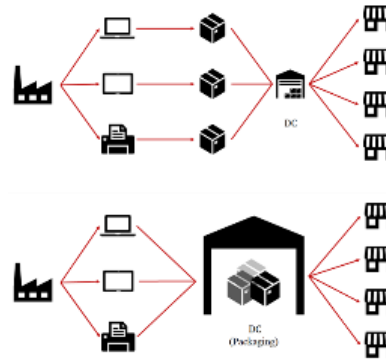


Monireh Mahmoudi

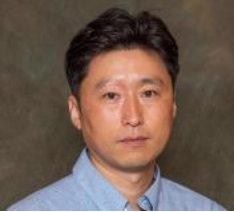
Assistant Professor

New
mathematical
models to
optimize logistics
of reusable
packaging systems

Packaging postponement optimization
analysis



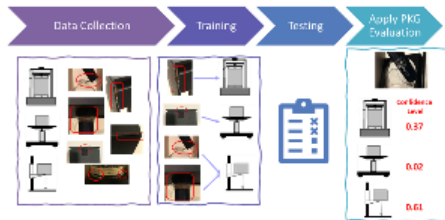
Packaging's role
in reducing food
waste



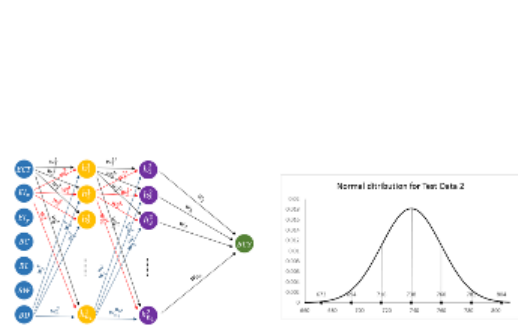
Euihark Lee

Assistant Professor

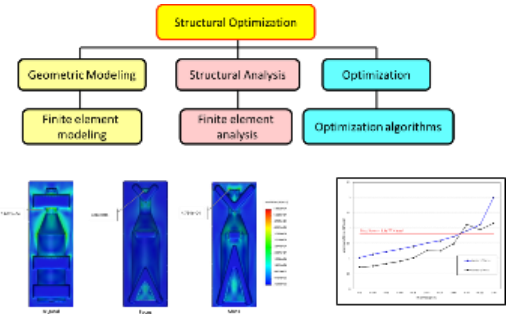
Develop packaging problem solving solutions using ML web scraping for packaging issues. Relate package key words in online customer reviews to shipping damage.



Use ML and AI techniques for box compression and other packaging design estimations



Structural design optimization using FEM tools

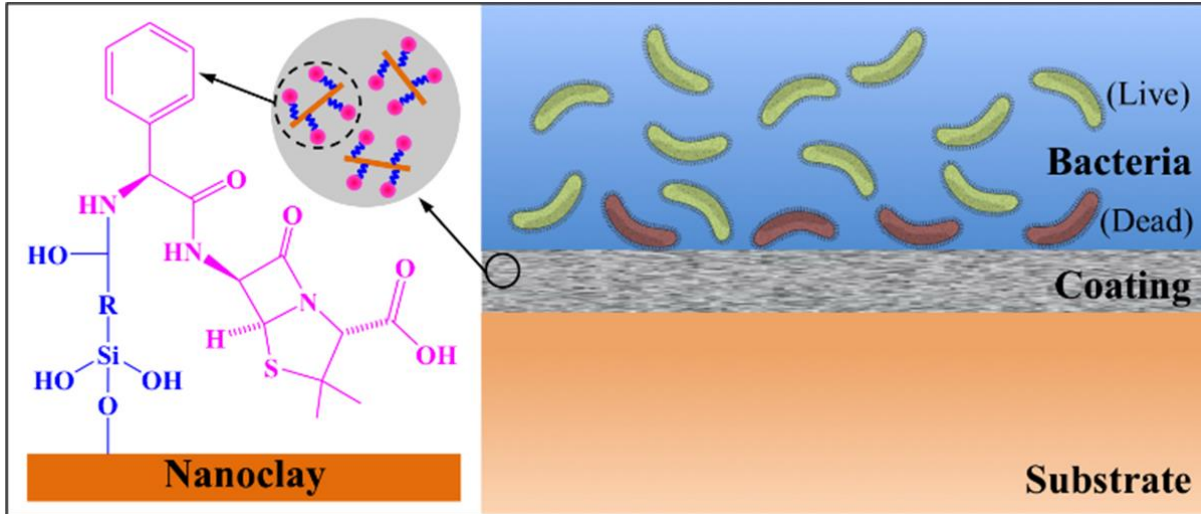




Maria Rubino

Professor

Dr. Rubino's research focuses on the mass transfer of vapors, gases, and additives in polymers and packaging systems, and the development of packaging systems based on active surfaces through the application of functional nanoparticles.



Nano particle
deposition onto films
for anti-microbial and
active surface properties



Laurent Matuana

Professor

Plant-based (corn, sugar beets) polymers with properties similar to PP. Nanoscale crystals from wood waste (food grade approved), that improve barrier properties. Commercially available now through MSU IP office.



Unpackaged (stored at 23°C for 2 d)



Packaged in PLA/CNC film. (stored at 23oC for 2 d)

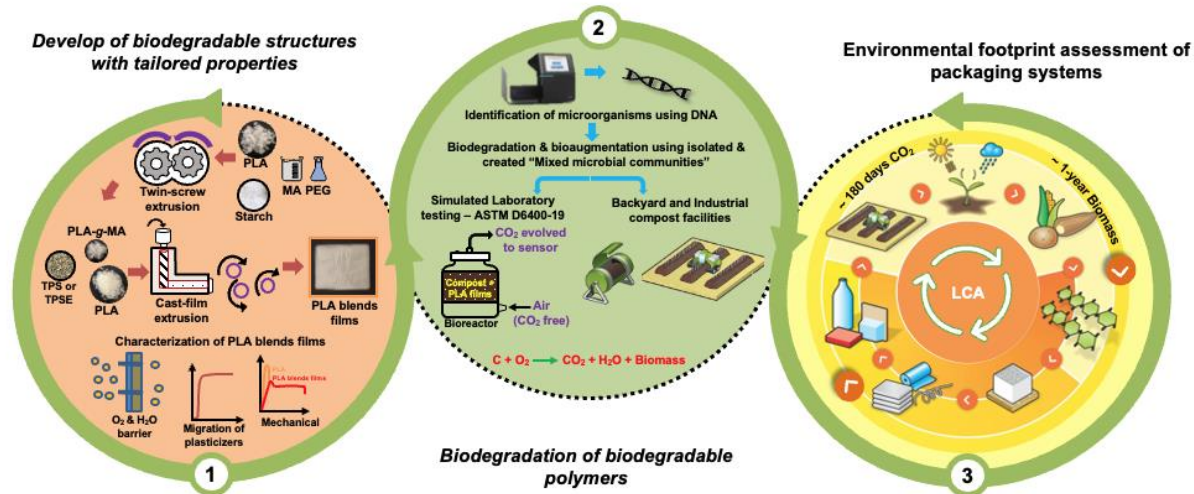
Insulating packaging films in place of foam or laminated layers. Recyclable mono polymer from low melt PLA. Example: food wrapper application.



Rafael Auras

Professor

Dr. Auras' research focuses on mass transfer in polymers, biodegradable and compostable polymers, life cycle assessment, packaging waste, and sustainable packaging systems.





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