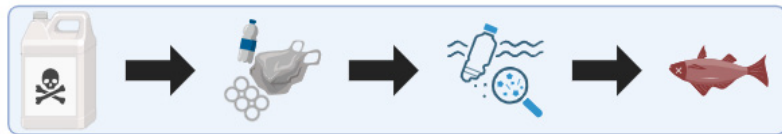


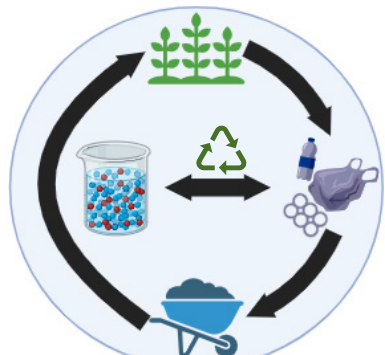
Linear life of non-sustainable plastics



Did you know?

All of Colorado's water sources and National Parks are polluted by microplastics.

Circular life of biobased and compostable plastics



BOTTLE's solution:

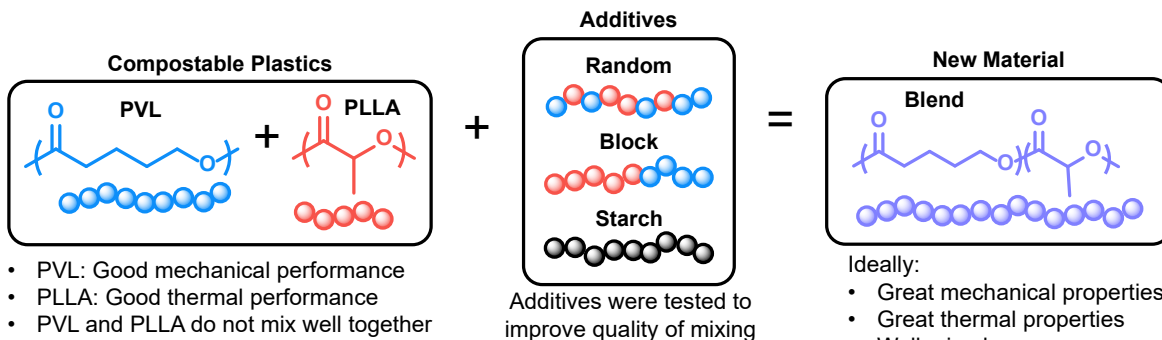
Design new plastics that are recyclable, biobased, and biodegradable or compostable.



Challenges:

- Most compostable plastics do not have the desired thermal and mechanical properties for packaging applications.

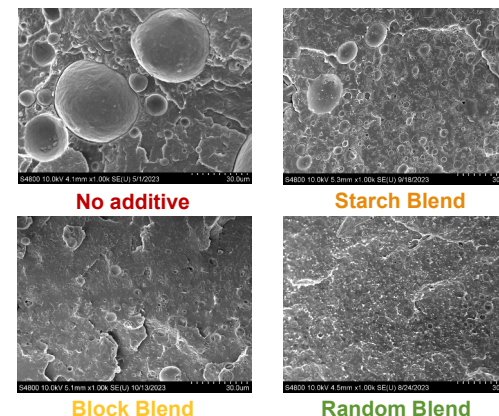
Two compostable plastics (PVL and PLLA) were blended with additives to make them compatible and synergize the desired thermal and mechanical properties.



Ideally:

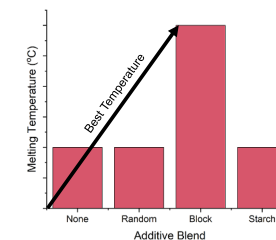
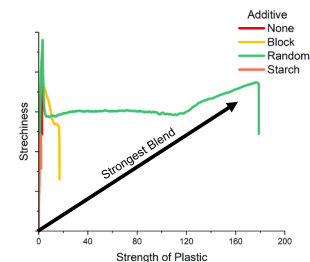
- Great mechanical properties
- Great thermal properties
- Well mixed

Blend Results



worst to best mixing

Images of plastic blends taken by microscope with micrometer scale



The mechanical properties were tested by pulling the plastic blends until they broke.

The thermal properties were tested by heating the plastic blends until they melted.

Conclusions:

- The random additive created the strongest, best mixed plastic material for packaging applications.
- Mixing compostable plastics is a feasible option for packaging!