

# AGILE RECYCLED POLYMER REFORMULATION

Dr. Mark Sullivan

12 Dec 2023

# AGENDA

- Regulation
- Challenges
- Ways Citrine can help
- Case study





**NOT AN OPTION TO IGNORE THIS CHALLENGE**

A large, dense pile of multi-colored plastic waste, including fragments of blue, red, yellow, green, and white plastic. A human hand is visible in the lower-left corner, holding a small portion of the waste. An orange rectangular box with the text "NOT EASY" is positioned in the upper-right area of the image.

**NOT EASY**

# HOW CITRINE HELPS

## Mechanical Recycling

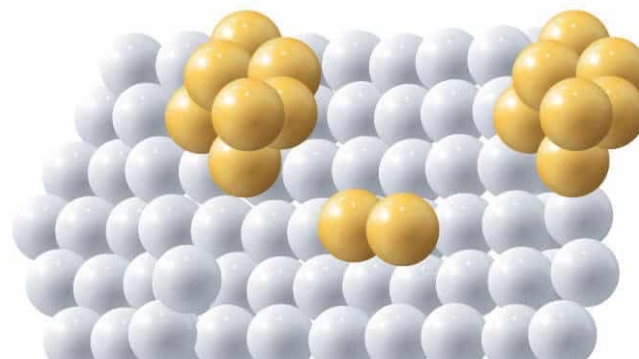
Rapid formulation development and adjustment



**WHITE PAPER** – CHALLENGES IN  
MACHINE LEARNING FOR FORMULATIONS

## Chemical Recycling

Catalysis development for higher efficiency



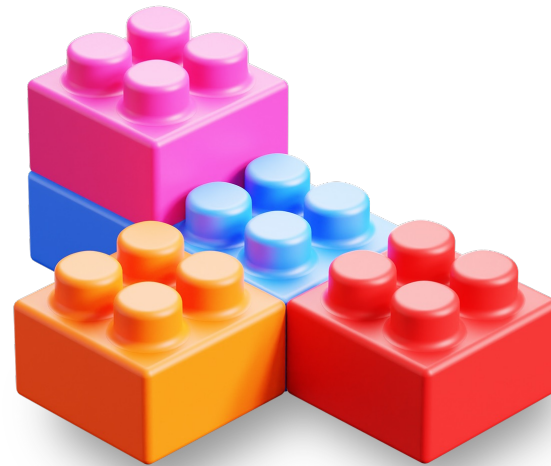
**WHITE PAPER** – AI AND CATALYSIS



# YOUR CUSTOMER WANTS CONSISTENCY



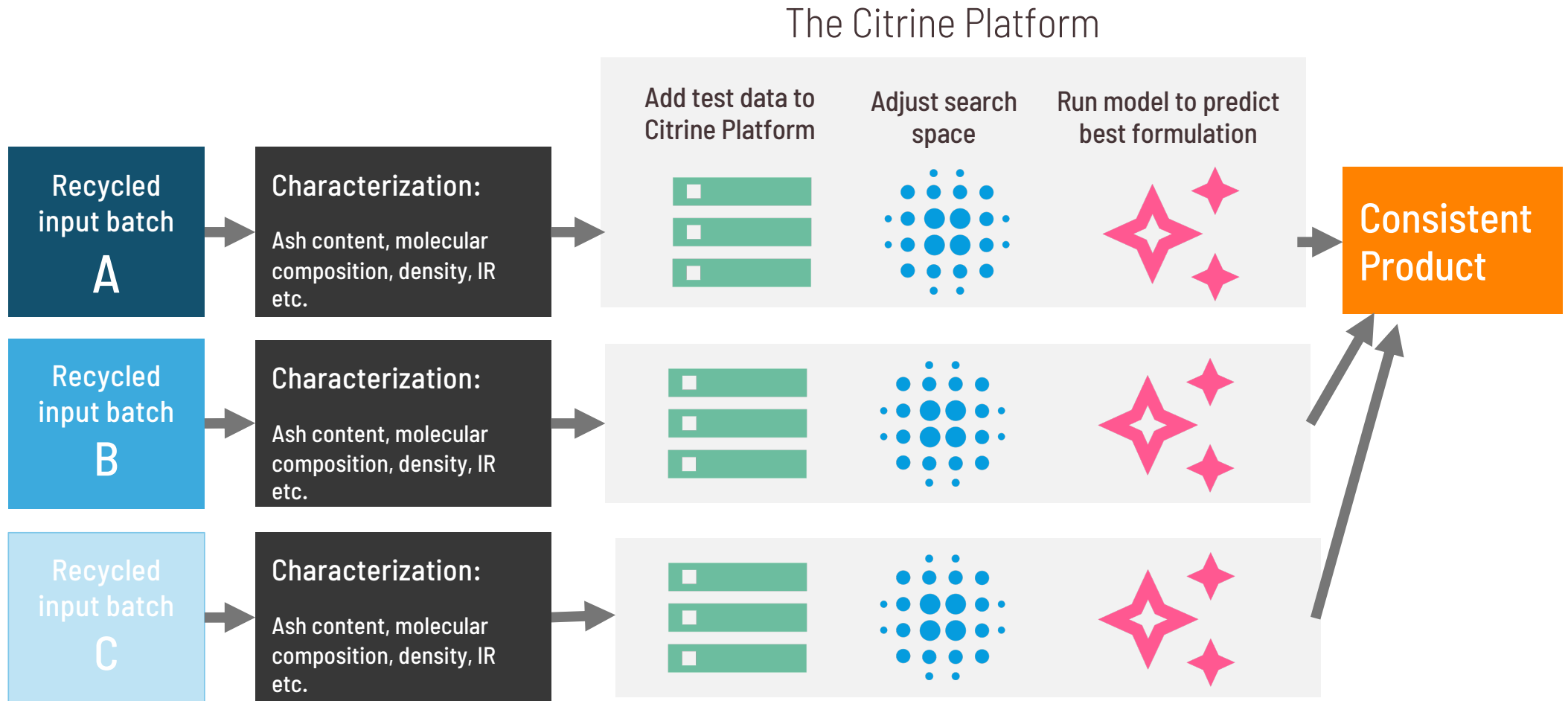
Varying raw materials



Customer's narrow technical specs.!



# HOW CITRINE HELPS



## Inputs

- Recycled ABS
- Virgin ABS
- Fibers & Fillers
- Other Additives



## End customer requirements

Notched Izod Impact Strength > 7.5 ft-lb/in

Minimum recycled content = 20%

# CASE STUDY





# SIMPLE WORKFLOW

This takes minutes not hours

Drag and drop in your test data

No code model creation captures expertise

Set formulations to contain specific recycled batch

Set target properties



Add a new raw material called *recycled batch A* and add its test data

AI model for ABS has been made and validated previously

Specify that you only want candidate formulations that include >20% *recycled batch A*

Your target properties remain constant – the customer requirements **Notched Izod Impact Strength > 7.5 ft-lb/in**



# SUMMARY

AI makes you agile so that as your raw materials change so can your formulation.  
That way you are always hitting the property targets your customer's demand.

[info@citrine.io](mailto:info@citrine.io)

