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Growing Cellulose Spheres for Consumption & Encapsulation

Laurel Bitterman

Montana Technological University

Adolfo Martinez

Montana Technological University

Grace Mulholland

Montana Technological University

Tyler Somerville

Montana Technological University

Dario Prieto

Montana Technological University

See next page for additional authors

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Authors

Laurel Bitterman, Adolfo Martinez, Grace Mulholland, Tyler Somerville, Dario Prieto, and Katherine R. Zodrow

Growing Cellulose Spheres for Consumption & Encapsulation



Laurel Bitterman, Adolfo Martinez, Grace Mulholland, Tyler Somerville, Dario Prieto, & Katherine Zodrow

Environmental Eng

Petroleum Eng.

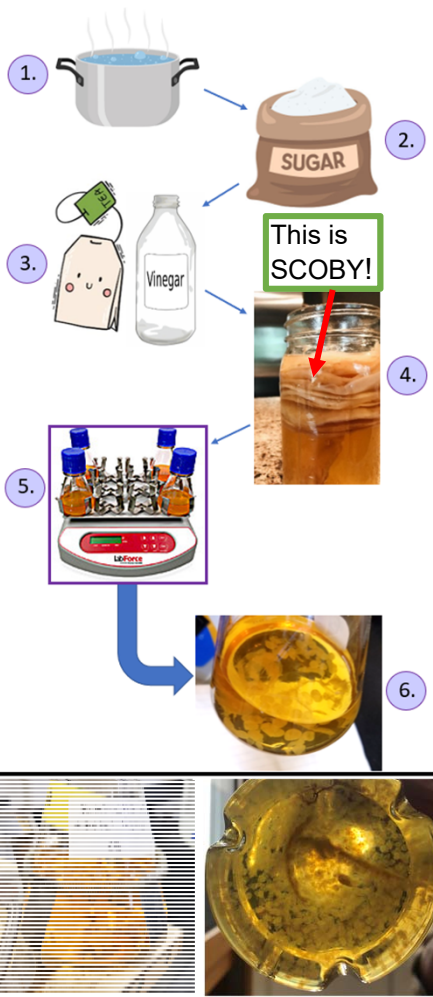
Environmental Eng.

Met. & Materials Eng.

Mechanical Eng.

Environmental Eng.

SCOBY Sphere Recipe



Goals

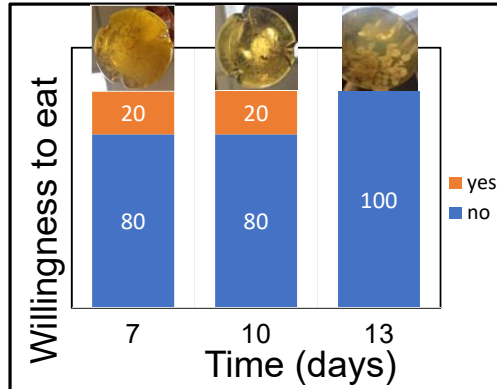
- Make a product from kombucha mat that normally goes unused
- Create cellulose spheres that will appeal to consumers

SCOBY Sphere Uses

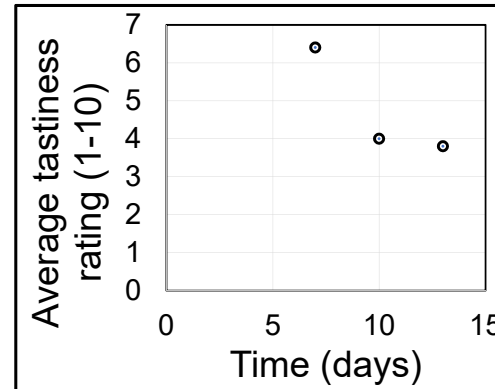
- Boba tea pearls
- Encapsulation
- Timed-release fertilizer

Future Research

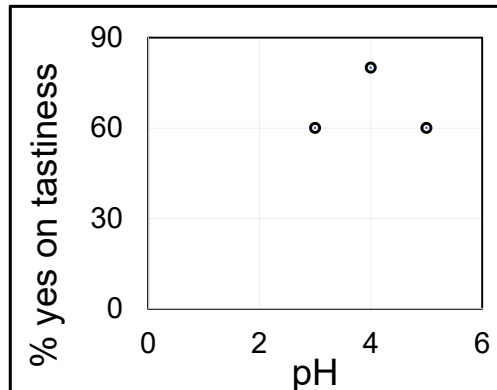
- Ability to encapsulate
- Improve edibility
- Marketing approach



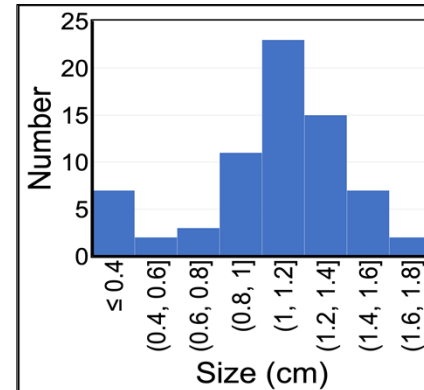
SCOBY Spheres Appear Least Appetizing after 13 Days



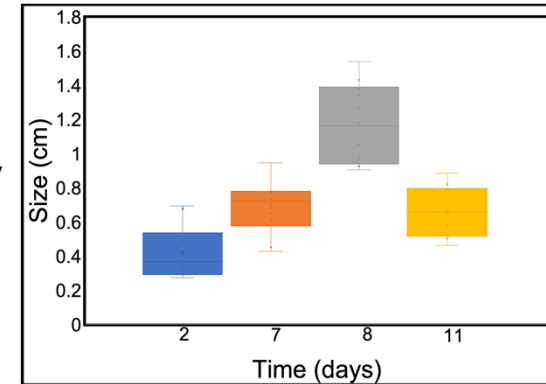
SCOBY Spheres Appear Most Tasty at 7 Days



Kombucha Mixture is Most Tasty at a pH of 4



SCOBY Spheres at a Size Range from 1-1.2 cm are Most Abundant



SCOBY Spheres are Largest on Day 8



About the Team

The RAMPer's are all engineering students from different backgrounds. Tyler's major is MET/MME, Grace and Laurel both study environmental, and Adolfo's focus is in petroleum. We have enjoyed bringing our different areas of expertise together to create SCOBY spheres!

References

1. Toyosaki, Naritomi, et al. *BBB*. 2020, 59:8, 1498-1502.
2. Eggensperger Giagnorio, et al. *Environ. Sci. Technol. Lett.* 2020, 7:3, 213-218.
3. Goh, Rosma, et al. *Int. Food Research J.* 2012. 19:1, 153-158.

Variable	Values
Agitation method	Stir vs. shake
Shake speed	42, 100, 120, 140 , 156 [rpm]
Flask type	Smooth vs. baffled
Sugar amount	7.3, 10.8 [mass % of soln.]
Hotel liquid amount	16.7, 28.6 , 33.8 [m % of soln.]