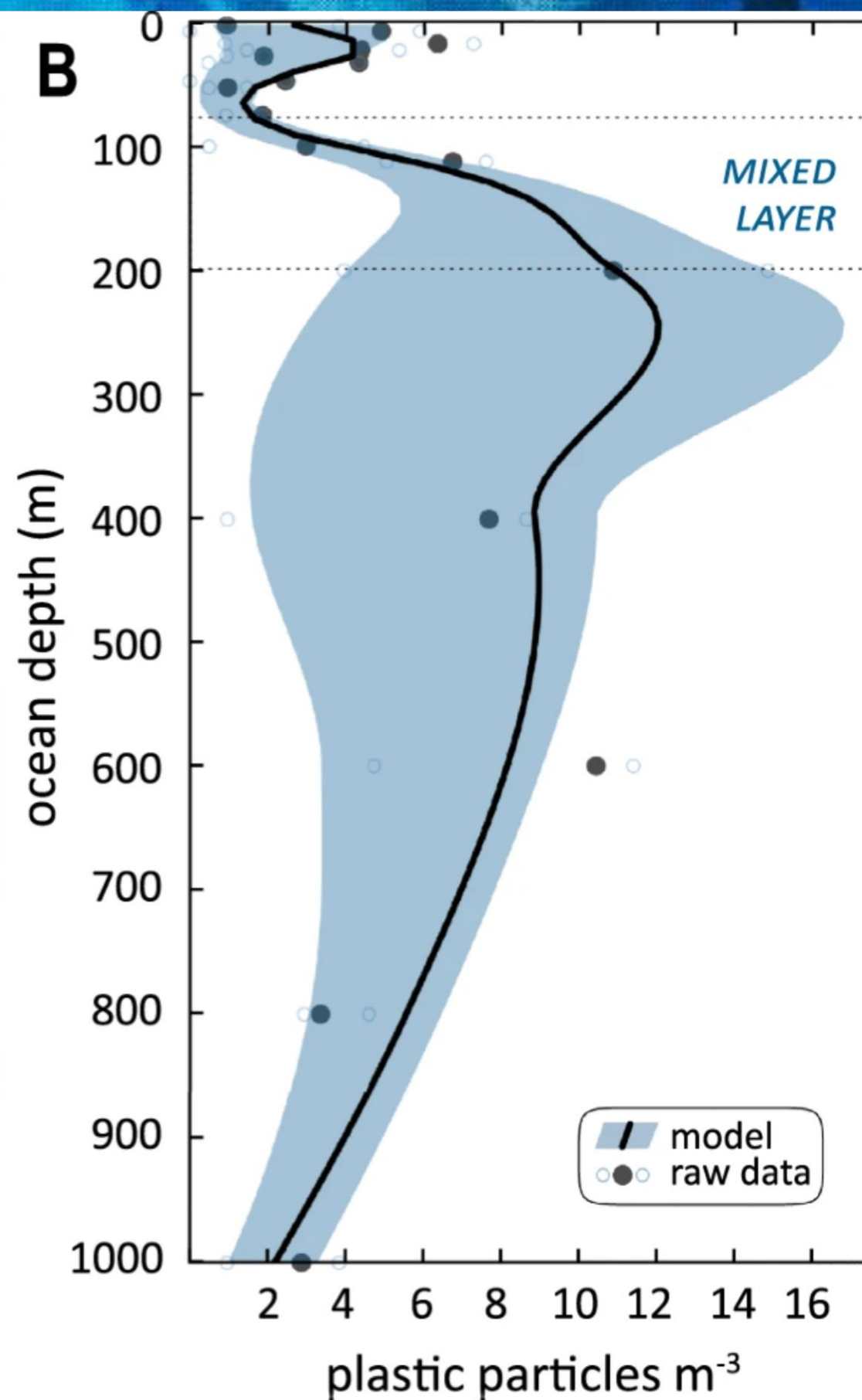


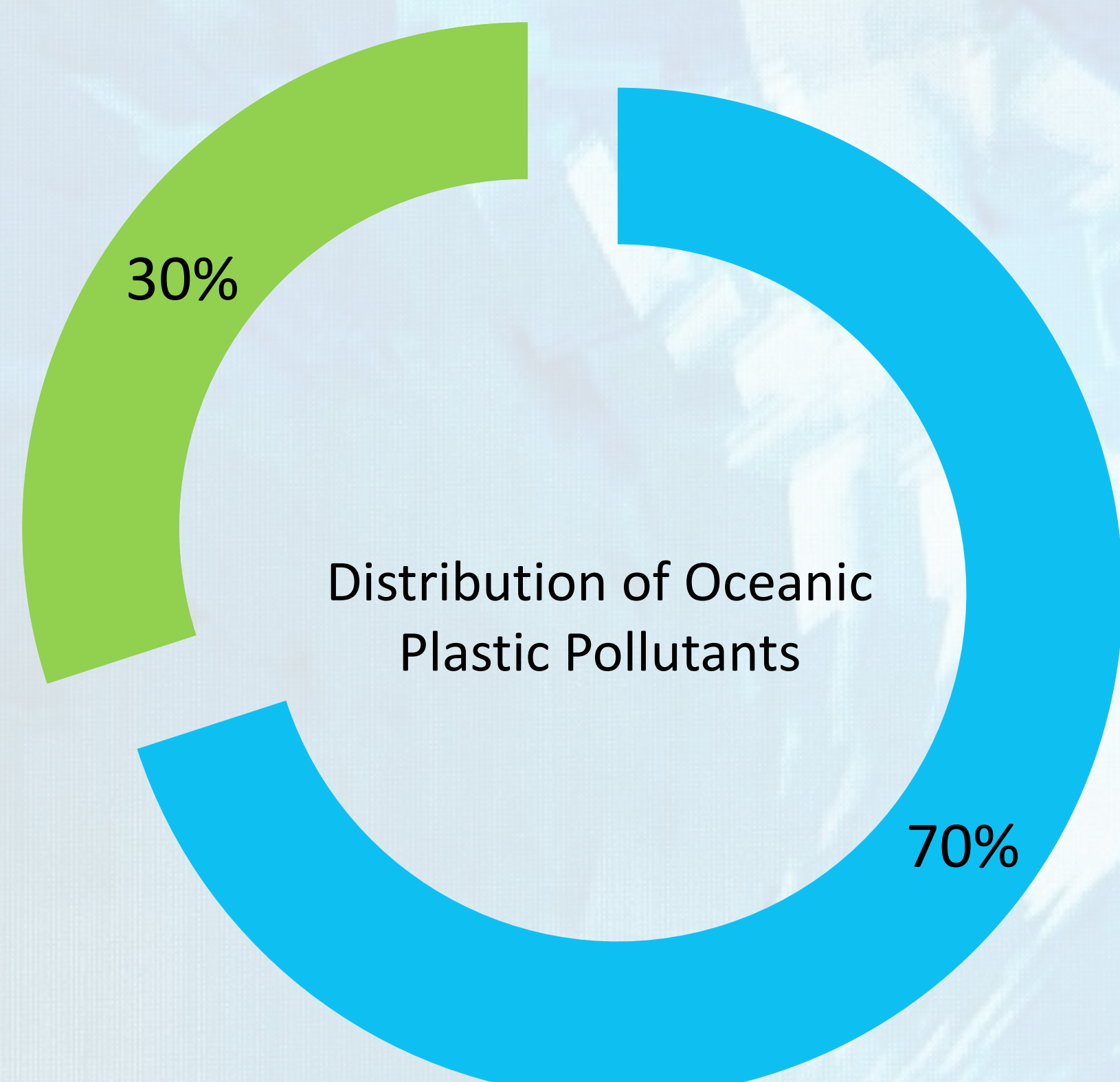
Abstract

An estimated 80 million tons of plastic enter the ocean each year due to the increasing global production of plastics. The majority of the efforts to clean up ocean plastics focus on surface plastics; however, most ocean plastics lie beneath the surface. Microplastics are fragments of plastics no larger than five millimeters, and millions of these pieces pollute the Earth's oceans. Microplastics not only contaminate the open ocean, but also the marine life that live within these aquatic environments. Our solution to address the underwater microplastic contamination is a submersible autonomous robot capable of filtering microplastics from the ocean. By filtering microplastics from aquatic environments, not only will the amount of plastic pollutants be reduced in these natural systems, these plastics will also be available for recycling into a sustainable closed loop process.

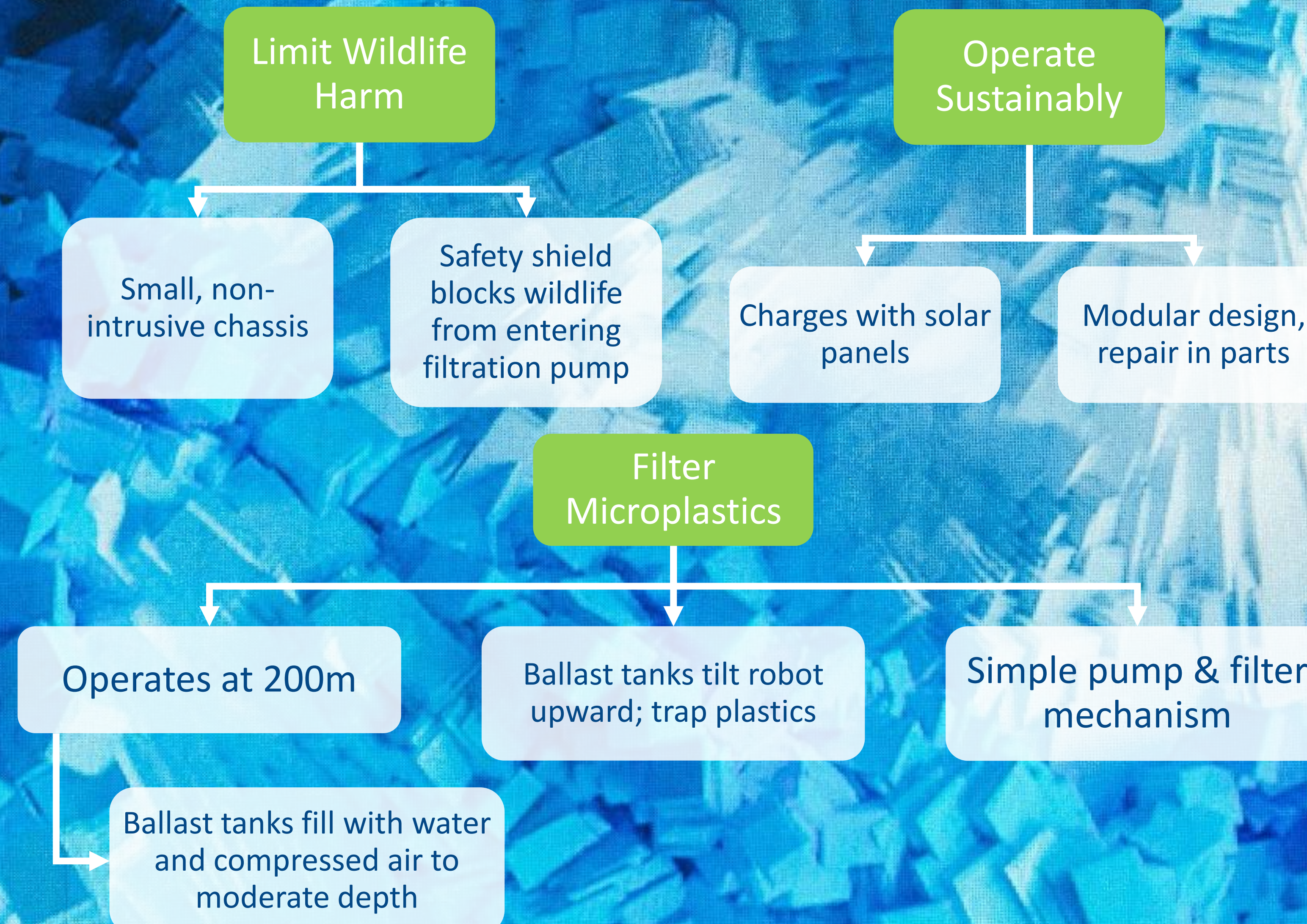
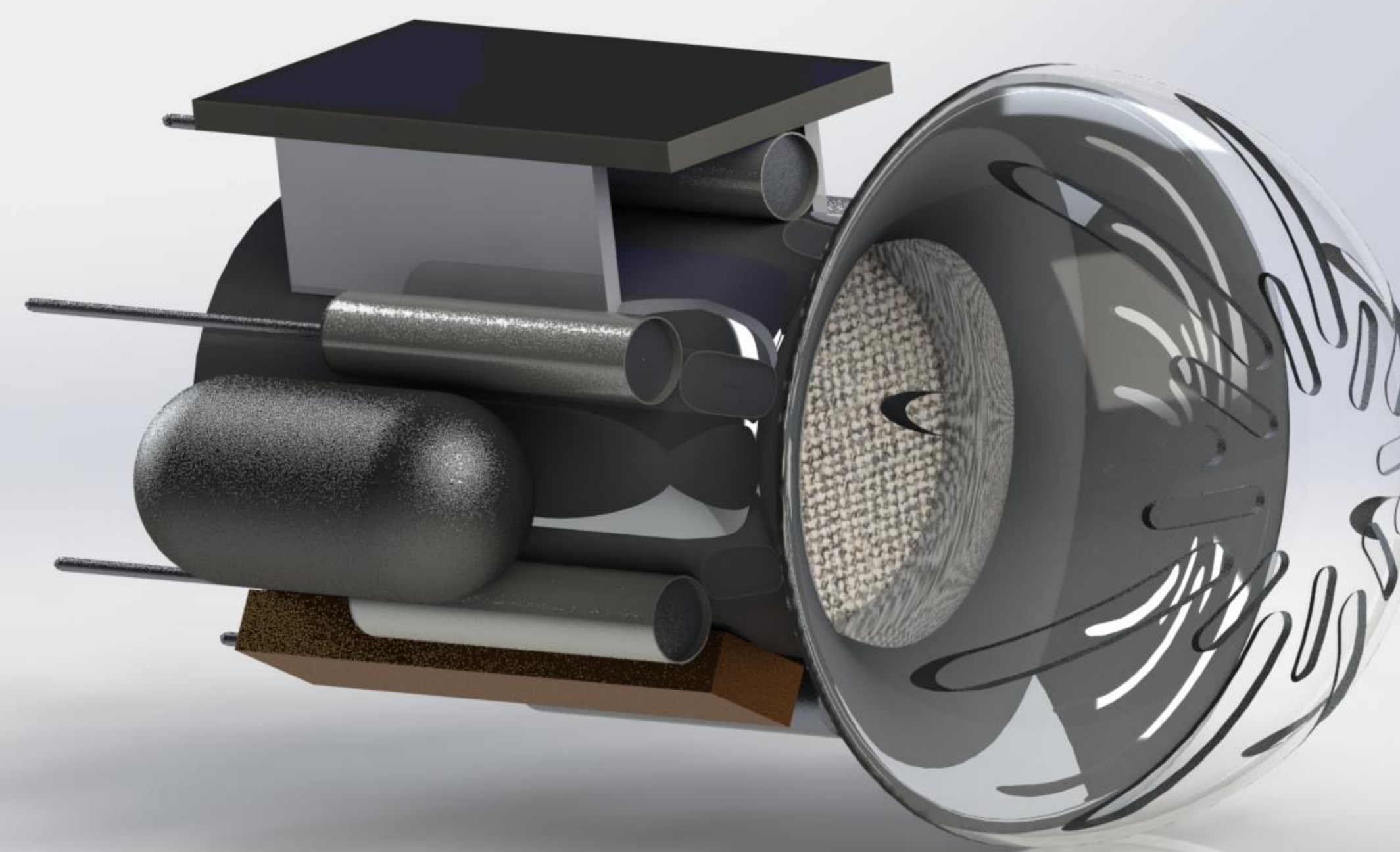


Research

■ Underwater Plastic Trash ■ Surface Plastic Trash



Design



Operation

- The ballast tanks fill with water and submerges the robot to 200m.
- The water pump pushes contaminated water through the filter, collecting plastics.
- The flow sensor determines that the collection is full and sends the signal to resurface.
- The ballast tanks fill with air from compressed air tanks and resurface the bot.
- The bot signals a crew, which replaces the filter and refills the compressed air tanks. The bot recharges using its solar panels and re-submerges.

Business Model

Product

Collect microplastics from aqueous environments are a product

Sell plastics to corporations to recycle

Service

Use LiquoBot as a means to clean microplastics from an aqueous environments

Charge a fee for water purification

Future of LiquoBot

- Contact potential sponsors, secure funding for the next stage in LiquoBot's development
- Family of products: LiquoBot for river cleanup, lake/pond cleanup, and ocean cleanup
- Work with experienced engineers to refine the design further and create a production-ready draft
- Add features such as internal filter cleaning and plastic storage to expand operating time

Resources

Henkel. "Why Are Microplastics a Problem – and What's the Solution?" *Tiny Plastic Particles, Big Discussion*, Henkle, 25 Oct. 2018, <https://www.henkel.com/spotlight/2018-10-25-why-are-microplastics-a-problem-and-what-s-the-solution-884352>.
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 Choy, C. Anela, et al. "The Vertical Distribution and Biological Transport of Marine Microplastics across the Epipelagic and Mesopelagic Water Column." *Nature News*, Nature Publishing Group, 6 June 2019.
 Jesse.w, et al. "Oceanographic Research Vessel Alguita." *Oceanographic Research Vessel Alguita*, 1 Jan. 1970, orvalguita.blogspot.com/.