



Enzymatic (micro)plastic degradation

Worried that nothing can stop the accumulation of (micro)plastic in the environment? acib has developed a variety of enzymes to get rid of them!

BACKGROUND

Microplastics, tiny plastic fragments, are a growing environmental threat contaminating our oceans, soil, where they can take centuries to degrade and even accumulate in the food chain and poses an immense concern for the human and animal health. Traditional solutions fall short, leaving us with a pressing need for innovative approaches.

TECHNOLOGY

acib leverages the potential of enzymes to target (micro)plastic for a greener future:

- **Enzyme discovery and development:** Identify and engineer highly efficient enzymes that target specific types of microplastics from esterases and lipases over cutinases to oxidoreductases and more.
- **Microbial source exploration:** We explore diverse environments like soil, oceans, and compost for unique enzyme-producing microorganisms.
- **Enzyme optimization:** Enhance enzyme activity and performance for faster and more complete microplastic degradation.
- **Degradation process optimization:** Tailor conditions (temperature, pH, salts, etc.) to maximize enzymatic breakdown efficiency.
- **Microplastic analysis:** Utilize advanced techniques (HPLC, GC, GPC, FTIR, etc.) to quantify microplastic degradation products and monitor progress.
- **Environmental impact assessment:** Evaluate the environmental safety and sustainability of our enzymatic degradation solutions.

Our technology can be used in wastewater treatment facilities, ocean, or landfill remediation efforts either on large-scale efforts or in small bioremediation kits which could be used by single person. We could use our enzymes for laundry detergents to degrade synthetic fibers before they ever enter the wastewater stream. Our enzymes can also be directly integrated into industrial processes to break down microplastic during production, be used for drinking water purification and probably many more things we haven't even thought of, yet.

OFFER

acib offers to break down microplastics using a large variety of enzymes, and thus to reduce plastic pollution for generations to come. The same technology can also be used to develop a fully sustainable enzymatic (bio)polymer recycling process. Gain a competitive edge with acib and be at the forefront of sustainable innovation.

Let us help you to reduce your environmental impact, to improve your product sustainability or to simply create a future free from microplastic pollution!

EXPERTS

Dr. Sara Vecchiato
Priv.-Doz. Dr. Doris Ribitsch
Univ.Prof. Dipl.-Ing. Dr.techn. Georg Gübitz

DEVELOPMENT STATUS:

TRL 3-5

KEYWORDS

- Microplastic Degradation
- Enzymatic bioremediation

CONTACT

Dr. Martin Trinker
Director Business Development & Fundraising
Austrian Centre of Industrial Biotechnology (acib)
Krenngasse 37 • A-8010 Graz

martin.trinker@acib.at
[+43 316 873 9316](tel:+433168739316)
www.acib.at