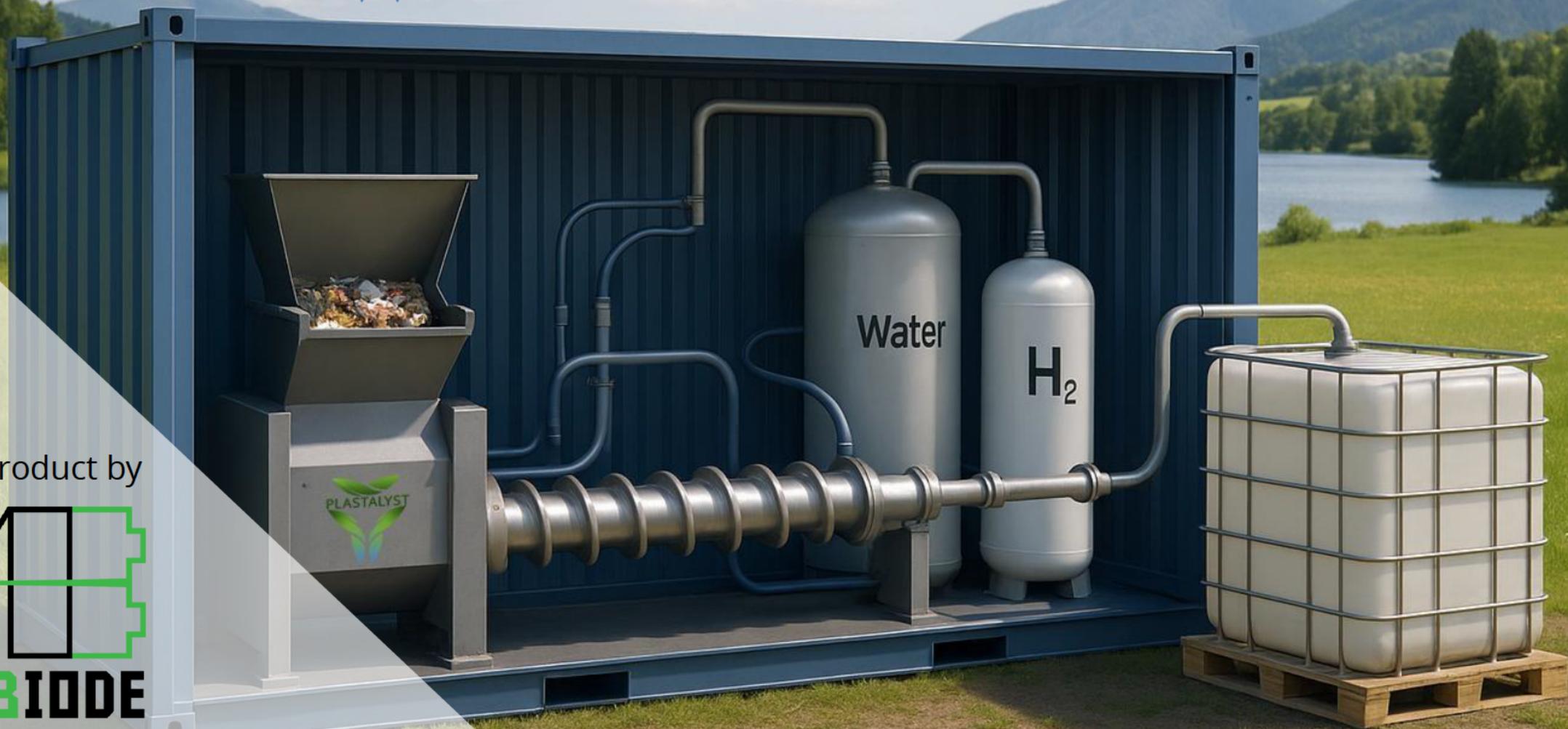


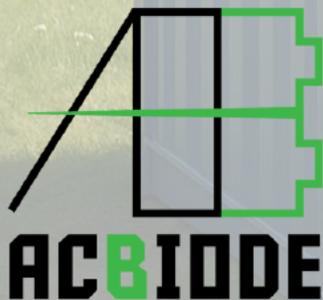


触媒を用いて、混合多層廃プラや有機廃棄物を180-270℃にてモノマー、水素、CO、アルコール等に分解
(ケミカルリサイクル)

AC Biode株式会社



a product by



Pollution & Greenhouse Gas Emissions



16Mt
CO2 Emissions
from Plastic
Incineration
Globally



Mechanical, Thermal, and Chemical Recycling



Problem

混ざり、汚れたプラスチック

ごみ分別

ダイキシン, 温暖化ガス

**高いCAPEX/OPEX
1,000°C以上の高温**



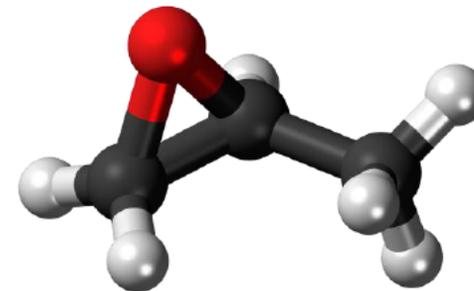
Chemical Recycling



混合、多層廃プラ



低温での解重合



Monomers



Chemical Recycling



有機廃棄物

リグニン、セルロース、下水汚泥、製紙汚泥、パーム油排水、ジーンズ、繊維、靴等

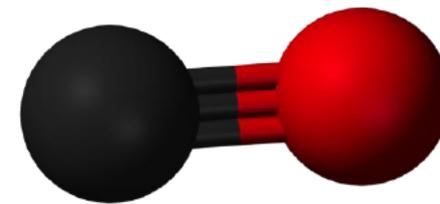


混合、多層、劣化した
廃プラスチック

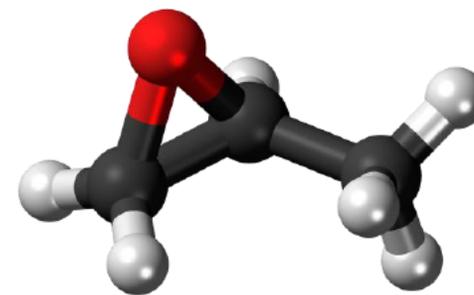


Solvent Free

触媒+水
180-270°C
(有機溶媒不使用
貴金属不使用)
発熱反応



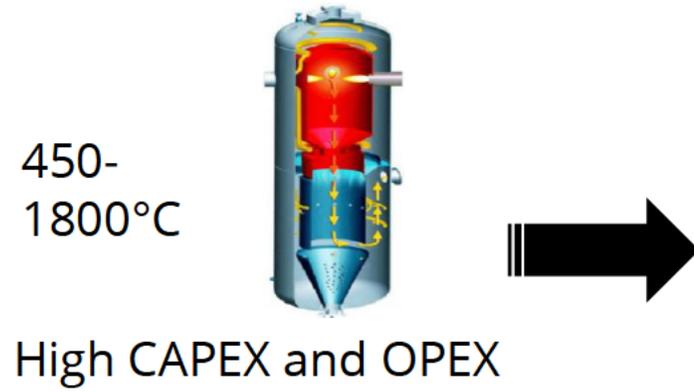
Syngas
for SAF, biodiesel &
more



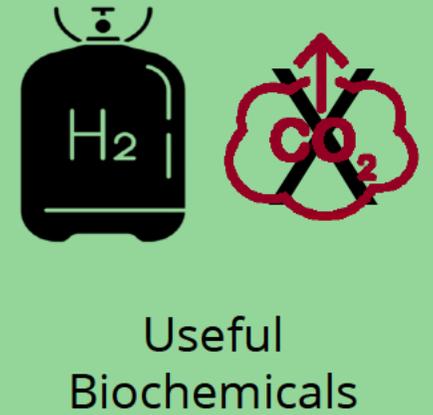
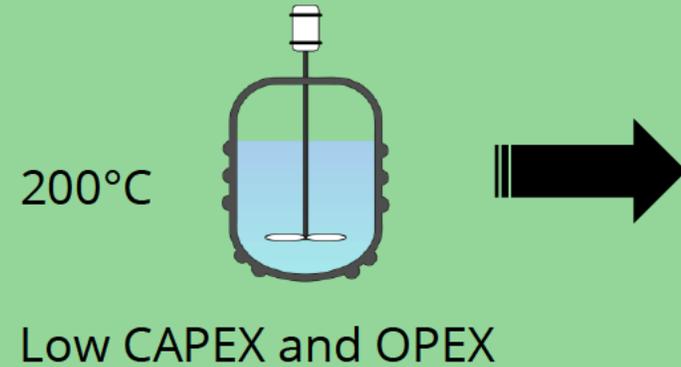
Monomers

Gasification vs. Plastalyst

- ✓ Wood Chips
- ✓ Cellulose
- ✓ Paper Sludge
- ✓ Microplastics



- ✓ Wood Chips
- ✓ Cellulose
- ✓ Paper Sludge
- ✓ Microplastics



Anaerobic Digestion vs Plastalyst

- ✓ Sludge
- ✗ Cellulose
- ✗ Paper Sludge
- ✗ Microplastics



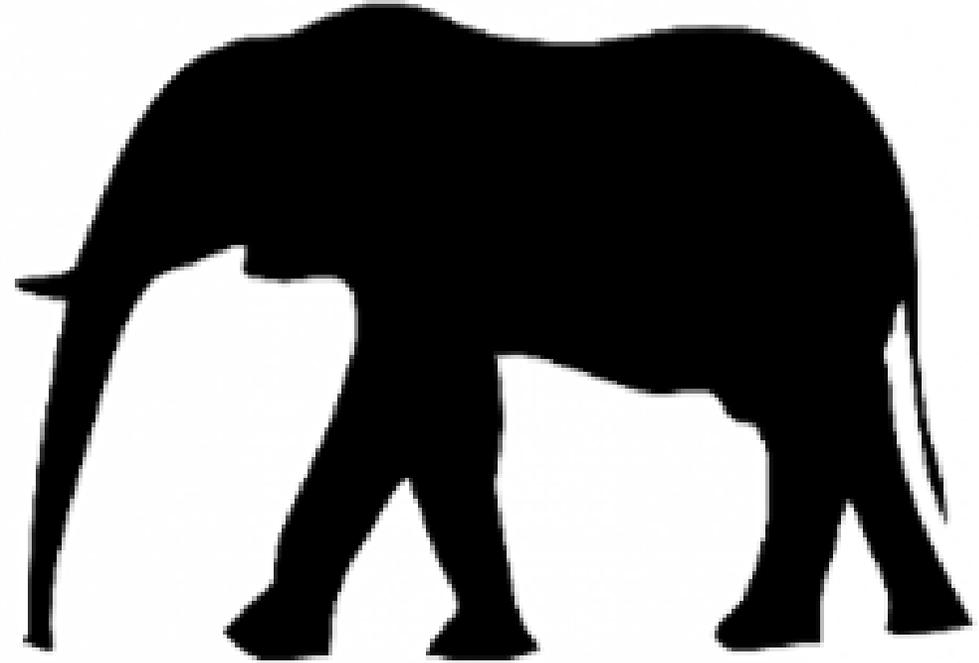
- ✓ Sludge
- ✓ Cellulose
- ✓ Paper Sludge
- ✓ Microplastics



ごみ処理1トンあたりの温暖化ガス排出比較*



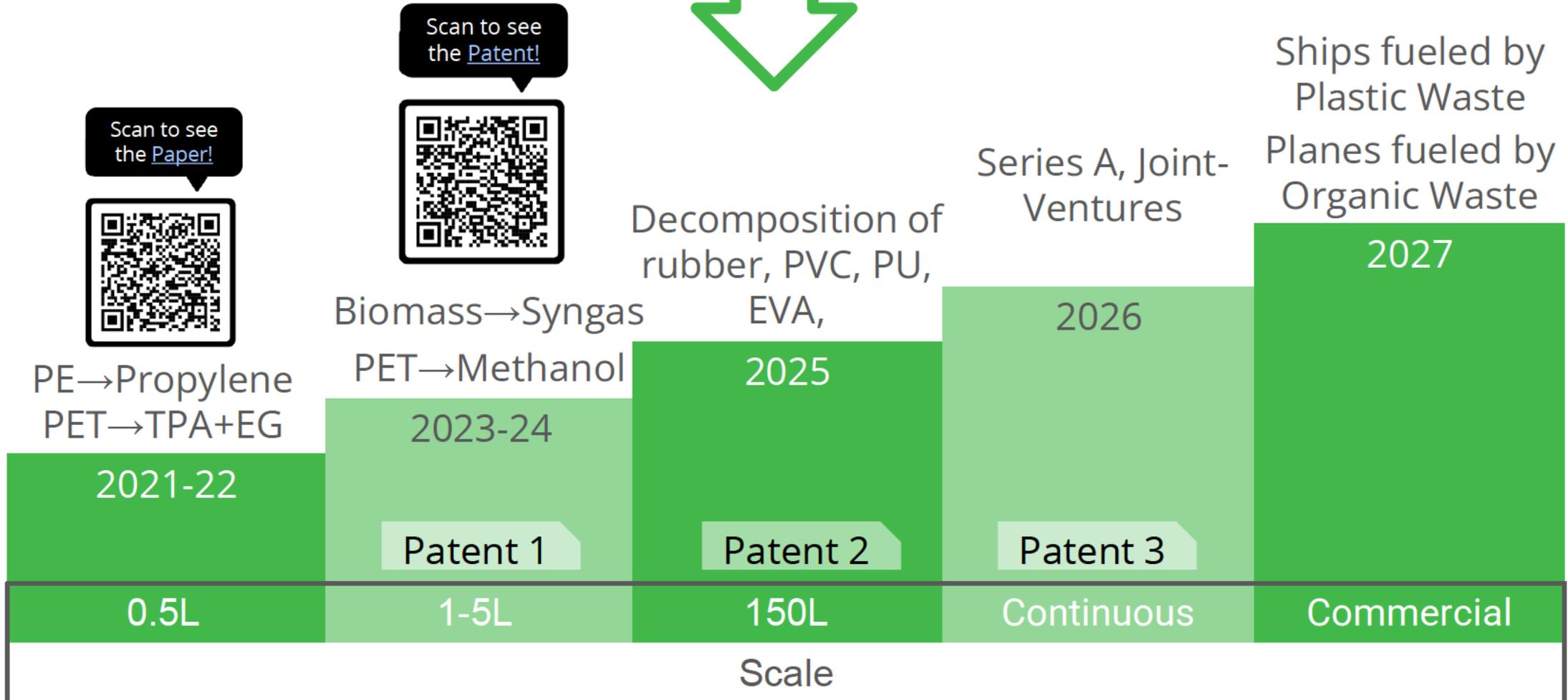
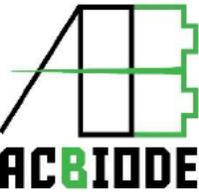
弊社製化学触媒
0.05 kg



ごみ焼却
450 kg

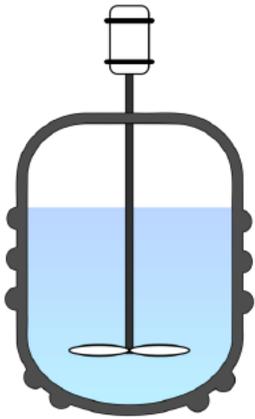
*日本触媒工業会

Roadmap



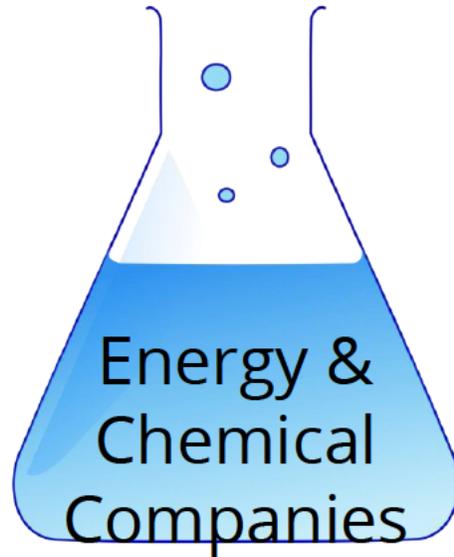
Partnerships

4



Reactor

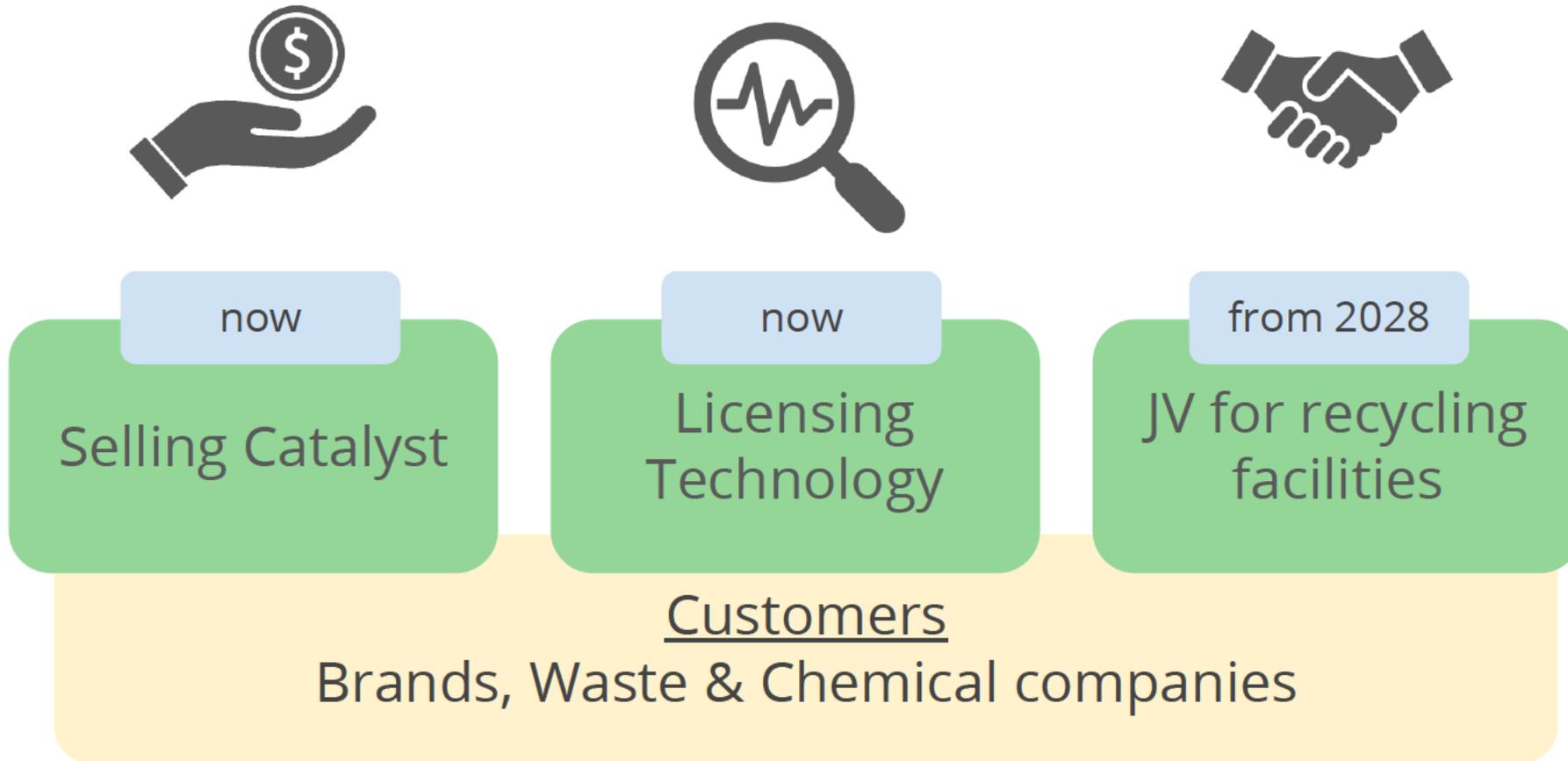
Manufacturers



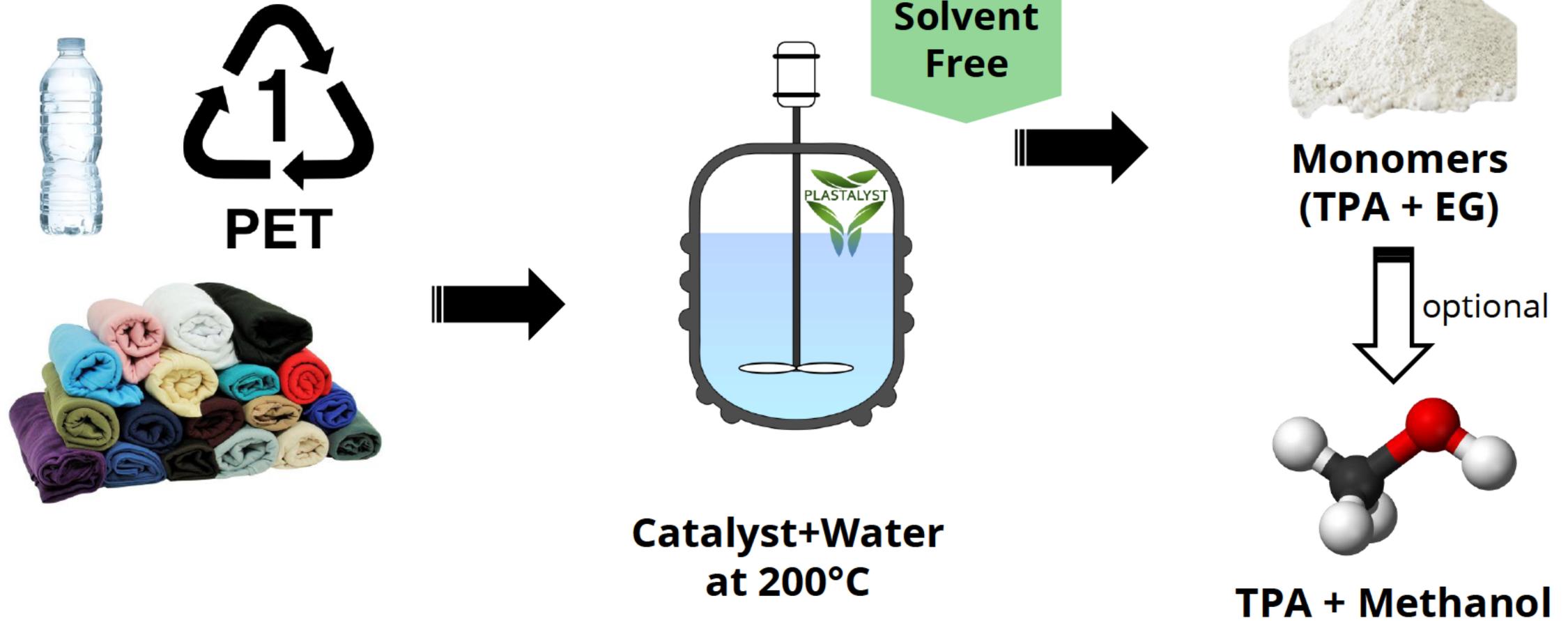
35



Business Model



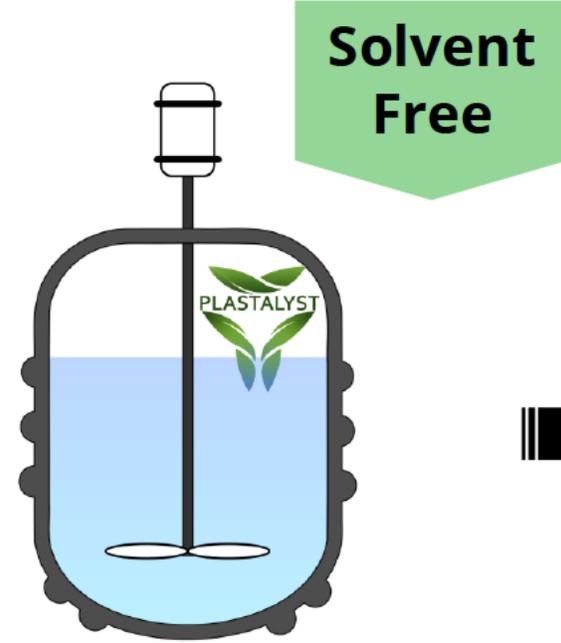
USP: PET into Methanol



3 Paid Pilots in Japan



PP, PE, PVC
and other end of life
plastics



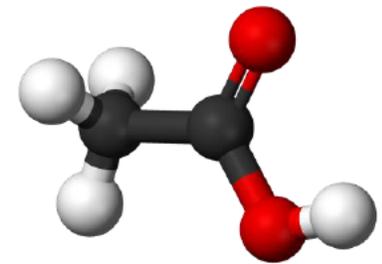
Water+Catalyst
200-300°C



Syngas
Hydrogen, Methane



Charcoal
Chlorine removal >99%



Liquids
H2O, acetic acid, formic
acid, salts of chlorine

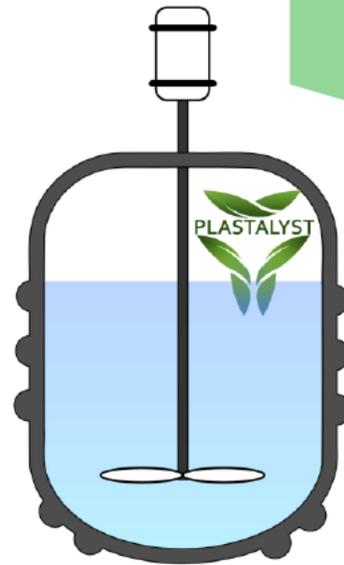


Carbonization

Chemical Recycling of Mixed Plastic Waste into Charcoal

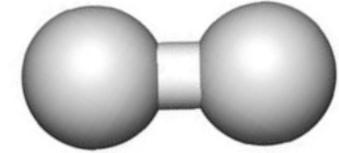


Mixed/
Multi-layered/
Deteriorated/
Plastic



Water+Catalyst
200-300°C

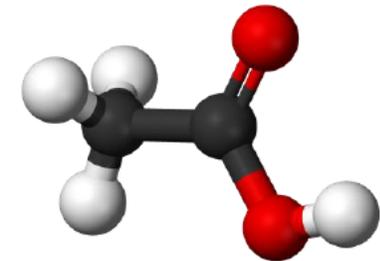
**Solvent
Free**



Syngas
Hydrogen, Methane



Charcoal
40-70%

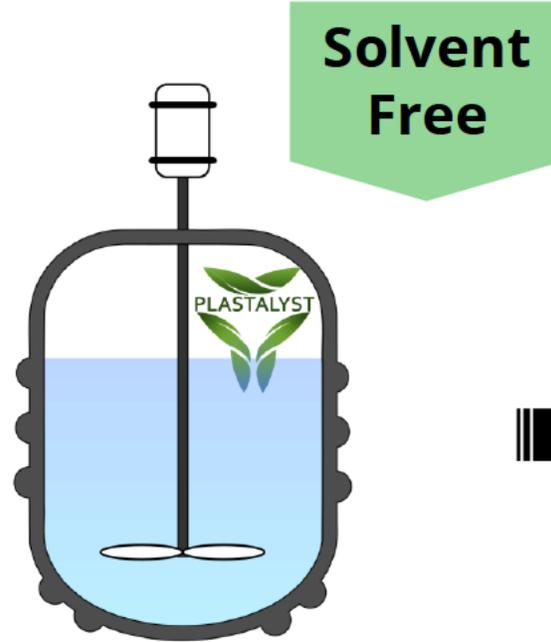


Liquids

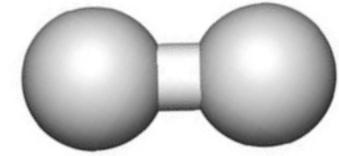
Carbon Fiber Reinforced Polymer (CFRP) or Glass Fiber Reinforced Polymer (GFRP)



Fibers +
Polymer Matrix



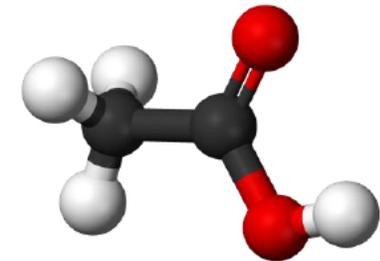
Water+Catalyst
200-300°C



Syngas
Hydrogen, Methane



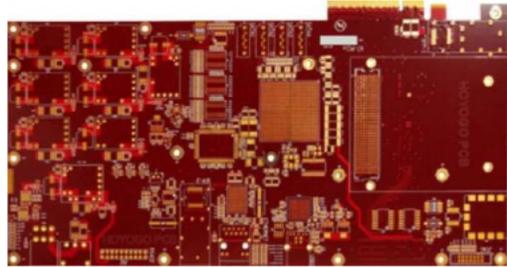
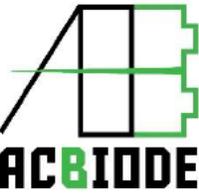
Fibers
reusable



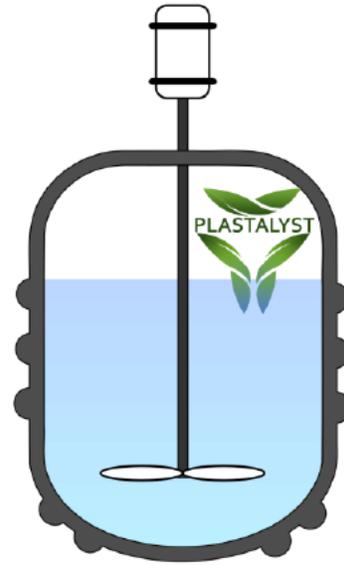
Liquids
Acetic Acid, Acetone

PWB/PCB

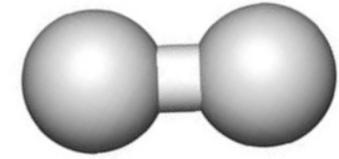
Decomposition of organics only



PWB/PCB
or circuit board



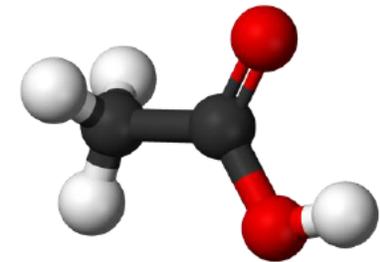
**Water + Secret
Recipe**
200°C



Syngas
no CO₂



Metals
Purity >99%

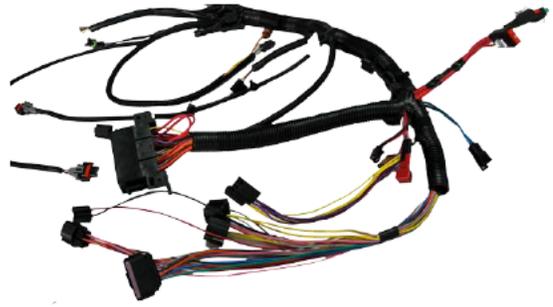


Liquids
H₂O, acetic acid, phenol
derivative, formic acid

Completed pilot

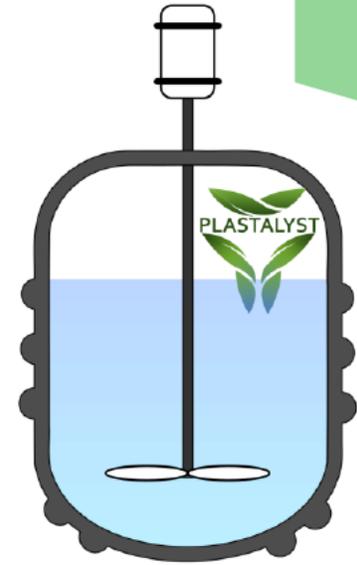
Our client estimates
that this will save them
150kt CO₂/year.

PVC completed pilot



Cables

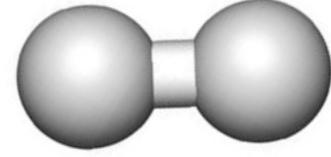
pilot with one of the largest wire and cable manufacturers in the world



Water + Catalyst

300°C

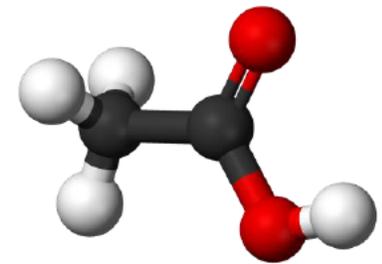
Solvent Free



Syngas
no CO₂



Charcoal
Chlorine removal >99%



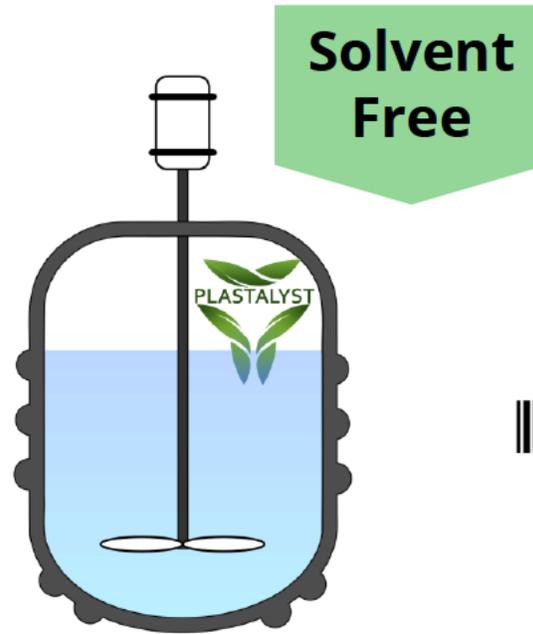
Liquids

H₂O, benzene, acetic acid, formic acid, salts of chlorine

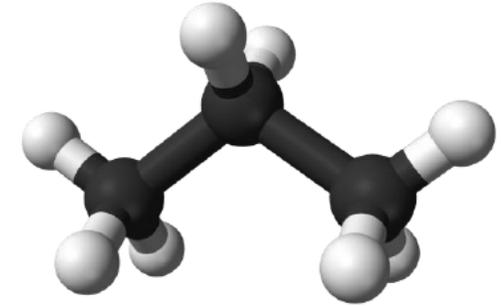
Rubber completed pilot



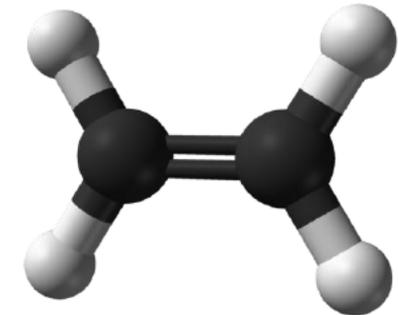
Styrene-Butadiene Rubber
with a large tire manufacturer



Water + Catalyst
200-300°C



Methane
Propane
Butane



Ethylene
& more

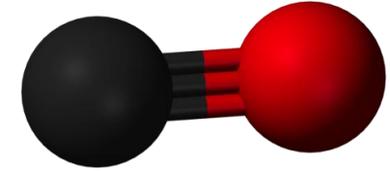
Demo Plant in Indonesia



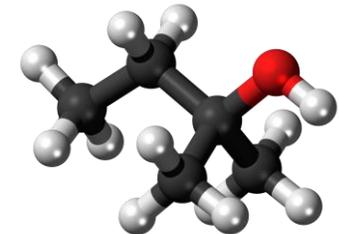
Organic Waste
from the Palm Oil Industry



150L Reactor
POME+ Catalyst
200°C



Syngas
50% H₂
45% Methane

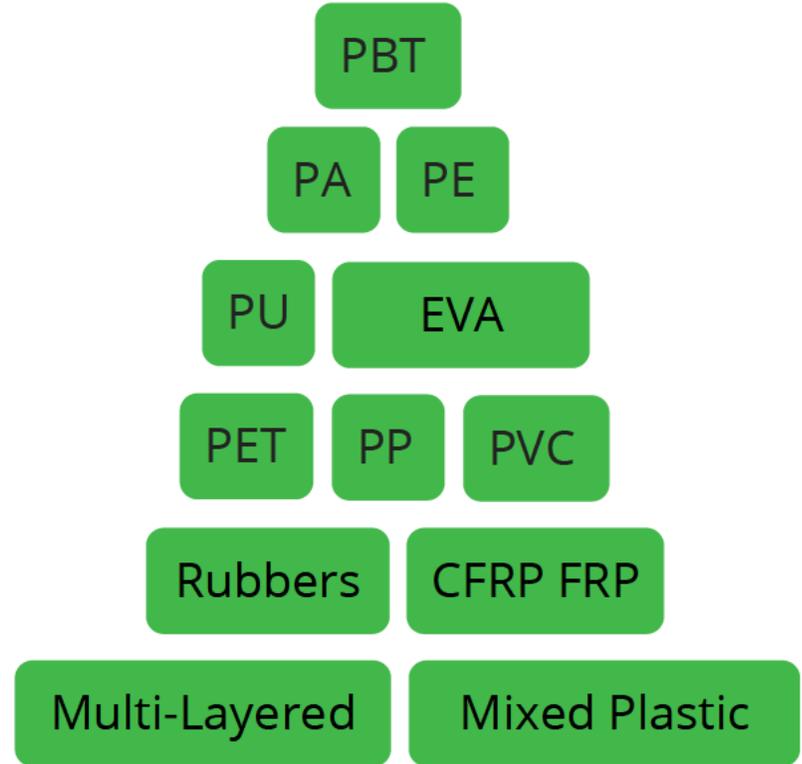
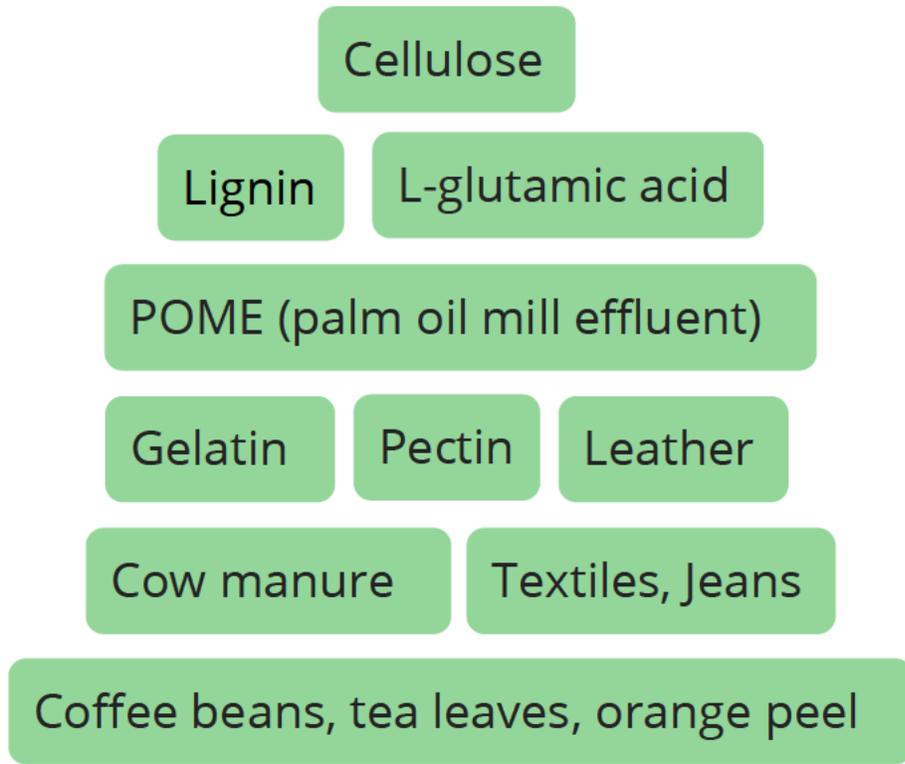


Useful biochemicals
Methanol
Acetone
Acetic Acid



TEMASEK
FOUNDATION

Materials Successfully Decomposed



以下の方々との連携を希望致します

- **事業会社、化学会社等：**
⇒ **実証実験、商談**
- **化学会社、触媒会社：**
⇒ **実証実験、共同研究開発、資金調達**

久保 直嗣

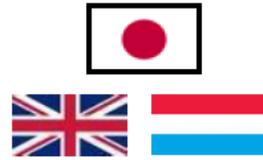
Co-Founder & CEO, AC Biode (日本、ルクセンブルグ)

tadashi.kubo@acbiode.com

Our Founders



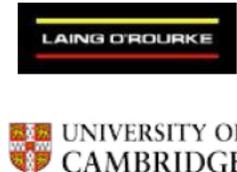
CEO
Tadashi Kubo
MBA



CTO
Atsushi Mizusawa
Ph.D. Material
Science



COO
Robert Kunzmann
MPhil Engineering



Our Team



Engineer
Habibur Rahman
Ph.D. Material
Science



Chemist
Sarah Sultan
Ph.D. Material
Chemistry



Advisor
Prof. Nishiyama
Ph.D. Engineering



Chemist
Kesava Rao
Ph.D. Material
Science



Material Scientist
Daa Hamed
Ph.D. Material
Chemistry



Fabrication Engineer
Jeganathan Chellamuthu
Ph.D. Material
Fabrication



Apply to join
the team



THANK YOU.

Questions?



COO

Robert Kunzmann

robert.kunzmann@acbiode.com



CEO

Tadashi Kubo

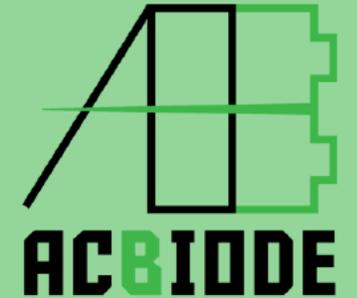
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