NEPIC Clean Growth Conference 2022

Sustainability in the Mitsubishi Chemical Group

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20th September, Hardwick Hall Hotel

Agenda

1. Mitsubishi Chemical Group .. and Mitsubishi Chemical Methacrylates

2. Sustainability Initiatives in Mitsubishi Chemical Methacrylates

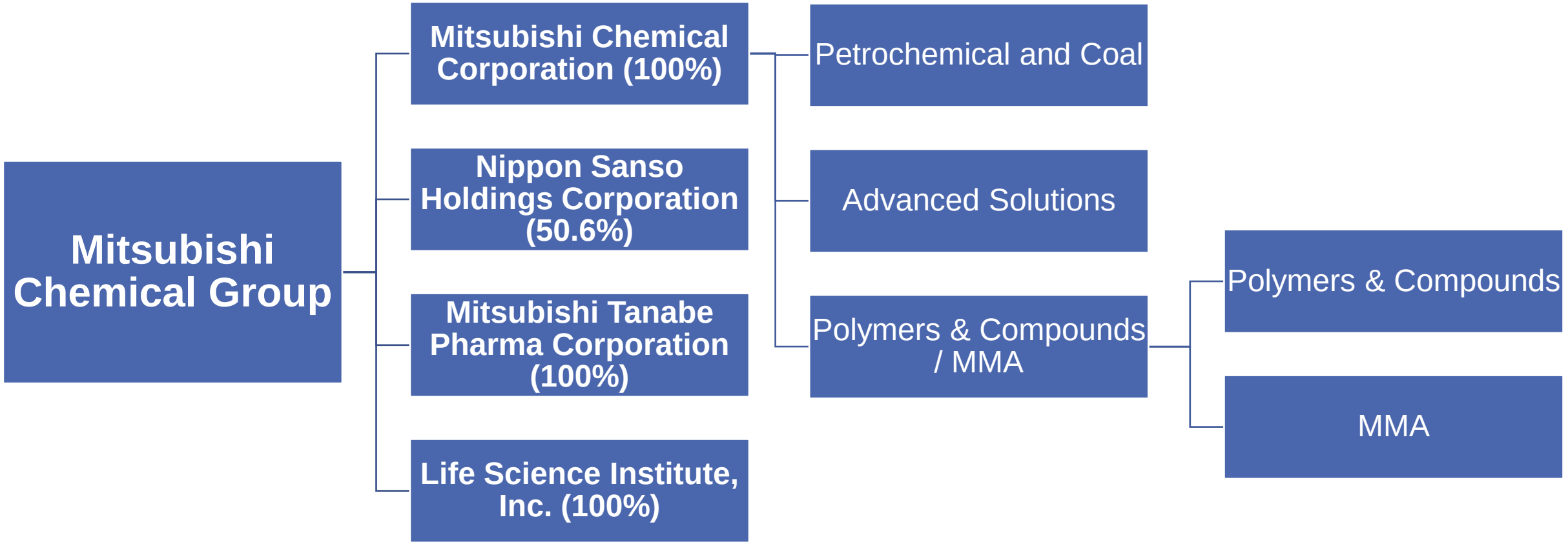
3. Sustainability Initiatives in the Mitsubishi Chemical Group

1. Mitsubishi Chemical Group .. and Mitsubishi Chemical Methacrylates

Mitsubishi Chemical Group

Group Structure

Fiscal Year 2021 Revenue ¥3976B / £26.4B



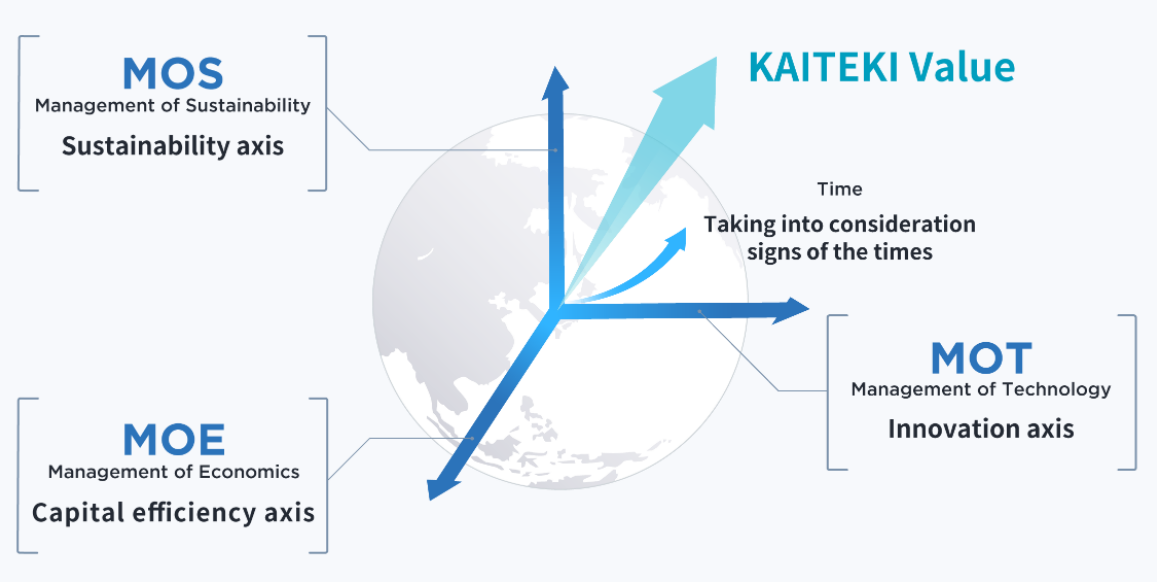
Our business – MMA – Mitsubishi Chemical Methacrylates (MCM) - https://mcc-methacrylates.com/

Mitsubishi Chemical Group

Sustainability Philosophy, "Kaiteki"

KAITEKI

- An original Mitsubishi Chemical concept - the sustainable well-being of people, society and our planet Earth
- Business development on four axes



Management of Sustainability

Material issues
Environmental Impact Reduction
Circular Economy
Life Cycle Assessment
Contributions to Communities
Biodiversity

MOS Indices
% of Sales from Circular+Climate mitigated products
GHG
COD
LCA Progress
Landfill Waste

Mitsubishi Chemical Methacrylates

What are Methacrylates (acrylics)?

Methyl methacrylate (MMA) monomer, a clear, colourless liquid

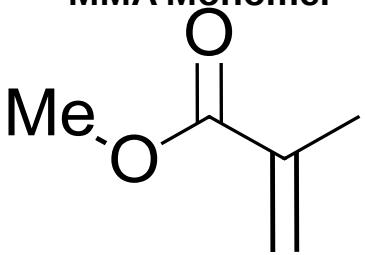
*The **building block** of the acrylic industry (3-4 million tpa)*

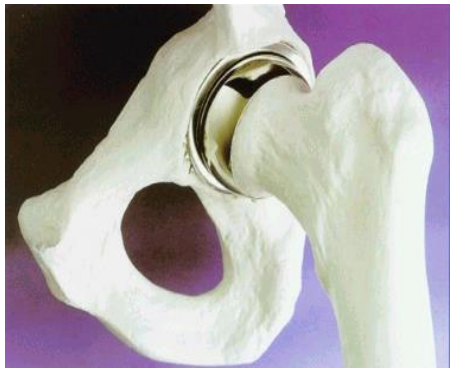
When polymerised it has unique properties

- *Exceptional optical clarity*
- *Weather and UV resistance*
- *Ability to take colour*
- *Bio compatible, safe in the body*
- *Can be blended to give additional properties*
- *Recyclable to virgin monomer*

Water miscible emulsion paint systems Low to zero VOC

MMA Monomer



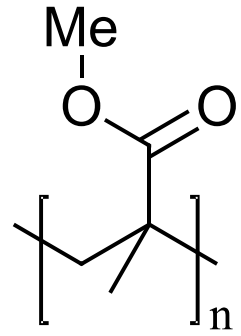


Bone cements for Hip replacements

Clarity and strength in aquariums

Mouldable components for the car industry

PMMA Polymer



Mitsubishi Chemical Methacrylates

A Global Business

- World #1in acrylic materials ~ 1.7 MTPA - 40% market share of ~3-4 MMTPA demand – global reach

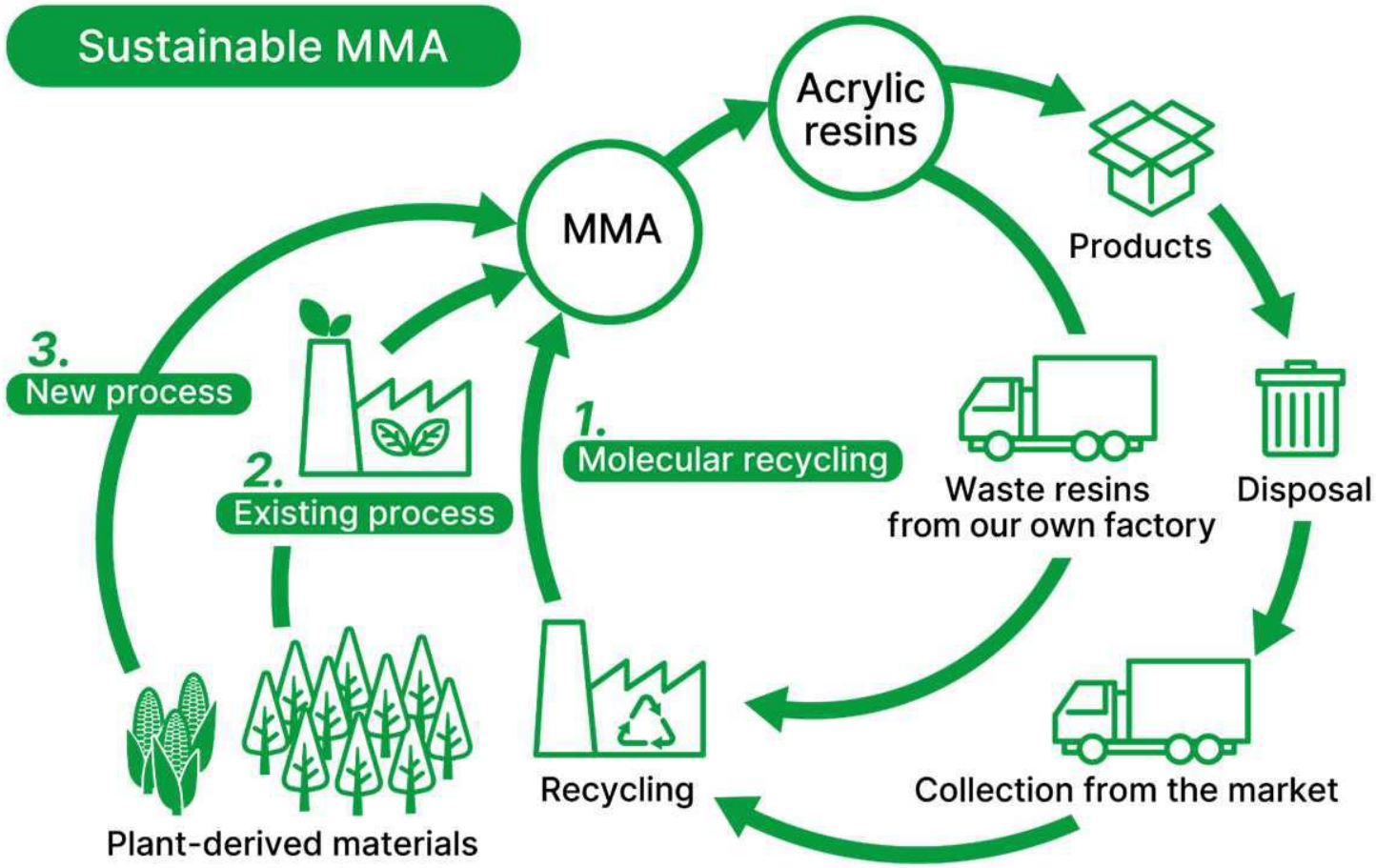
2. Sustainability Initiatives in Mitsubishi Chemical Methacrylates

Sustainability Initiatives in Mitsubishi Chemical Methacrylates

- Continuous improvement in Scope 1, 2 and 3 emissions of petrochemical assets, including planned Alpha 3 350 KTPA investment in Geismar, Louisiana USA

- Mass-balanced certification in response to customer's requests

- Aggressive technology development activity on circular economy initiatives:-
    1. Molecular Recycling of PMMA polymer to MMA monomer
    2. Plant derived materials into existing plants to make MMA
    3. Plant derived materials into new processes to make MMA



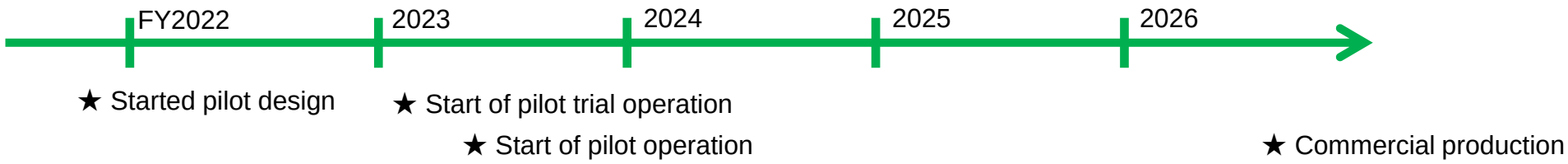
Sustainability Initiatives in Mitsubishi Chemical Methacrylates

1. Molecular Recycling:-

- Japan initiatives - Microwave Chemical and Mitsubishi Chemical have agreed to build a demonstration plant to commercialize acrylic resin chemical recycling
- UK initiatives – Agilyx partnership on thermal depolymerization, UKRI “Prosperity Partnership” programme on University of Nottingham / Mitsubishi Chemical UK Ltd. Microwave depolymerisation

2. Bio-Feedstocks into Existing MMA Assets

- Taking existing biogenic carbon molecules into our existing MMA processes, to make biogenic carbon derived, lower CFP methacrylate monomer – Japan Initiatives, piloting full scale process



3. Direct Routes to Bio-MMA

- Development of biotech fermentation process to go directly from bio-feedstocks, preferably from lignocellulosic sources, to make biogenic carbon derived, lower CFP methacrylate monomer; inter alia, UKRI “Prosperity Partnership” University of Nottingham / Mitsubishi Chemical UK Ltd. bioprocess technology programme

3. Sustainability Initiatives in the Mitsubishi Chemical Group

Mitsubishi Chemical Group Actions

Recycling

November 21

- Mitsubishi Chemical has developed KILAVIS™RC, a new nylon filament yarn mixed with nylon resin recycled from fishing nets discarded in Japan

July 2021

- ENEOS & Mitsubishi Chemical to Jointly Implement Plastic-to-Oil Conversion Business — Construction of Japan's Largest-scale Plastic Chemical Recycling Facility

June 2021

- Chemical recycling of plastic waste – Mitsubishi Chemical has entered into a License agreement for chemical recycling process with Mura Technology (London, UK), for use of the (HydroPRS™) for manufacturing raw materials (regenerated oils) for chemical products from plastic wastes

Mitsubishi Chemical Group Actions

Bio-Based Materials

August 2022

- Plant-based bioengineering plastic "DURABIO™" has been adopted for the bevel of the Casio "PRO TREK®," a watch brand for nature lovers

March 2022

- Mitsubishi Chemical and Toyota Tsusho have begun a joint-consideration to manufacture and sale ethylene, propylene, and their derivatives using bioethanol as a raw material, with an aim to commence operation in 2025
- Commercialisation of Apparel Brand “age3026™” garments made from Mitsubishi Chemical“ Soalon™ Plant-based Yarn

Feb 2022

- Mitsubishi Chemical Biomass-Based PCD BENEBiOL™ - a biomass-based polycarbonate diol – certified as USDA Bio-based Product
- Mitsubishi Chemical - Bio-based Engineering Plastic with Excellent Design and Durability "DURABIO™" Adopted for Use in Pilot Ballpoint Pens

September 2021

- FORZEAS™, using BioPBS™, a biodegradable and plant-derived plastic developed by Mitsubishi Chemical, is to be used for cutlery made by Tosho Chemical Co

Thank you for your attention!

Any questions?