AOG Energy Conference Presentation

15 March 2023 – Perth, Australia: PharmAust Limited (ASX: PAA & PAAO), a clinical-stage biotechnology company is pleased to provide the enclosed presentation which will be presented by Dr Madian Jinzarli, at the AOG Energy Conference held at the Perth Convention & Exhibition Centre.

This announcement is authorised by the Board.

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About PharmAust Limited:

PharmAust Limited is listed on the Australian Securities Exchange (PAA) and the Frankfurt Stock Exchange (ECQ). PAA is a clinical-stage company developing therapeutics for both humans and animals. The company specialises in repurposing marketed drugs lowering the risks and costs of development. These efforts are supported by PAA's subsidiary, Epichem, a highly successful contract medicinal chemistry company that generated $3.4 million in sales of goods & services in FY 2022.

PAA's lead drug candidate is monepantel (MPL), a novel, a potent and safe inhibitor of the mTOR pathway – a pathway having key influences in cancer growth and neurodegenerative diseases. MPL has been evaluated in Phase 1 clinical trials in humans and Phase 2 clinical trials in dogs. MPL treatment was well-tolerated in humans, demonstrating preliminary evidence of anticancer activity. MPL showed objective anticancer activity in dogs. PAA is uniquely positioned to commercialise MPL for treating human and veterinary cancers and neurodegenerative diseases as it advances a reformulated version of this drug through Phase 1 and 2 clinical trials.

About Epichem Pty Ltd:

Epichem is a wholly owned subsidiary of the ASX listed company PharmAust Limited. Located in Technology Park, Western Australia, Epichem has been delivering products and services in synthetic and medicinal chemistry to the global drug discovery and pharmaceutical industries in over 40 countries worldwide for over 18 years.

Epichem has purpose-built, state-of-the-art laboratories and has world class equipment and expertise in synthetic and medicinal chemistry to support drug discovery projects, and for the cost-effective synthesis of drug analogue libraries and intermediates. It also has a rapidly growing catalogue of pharmaceutical reference standards.

Epichem also specialises in Custom Synthesis, Analytical Chemistry and Materials Science. Epichem is the winner of the WA Industry Export Award 2021 for International Health, an award also won in 2019, 2018 and 2017, the 2020 Inspiring Story of Celebrating Remarkable Resilience Nomination for WA for the Australian Export and Investment Awards and the 2021 and 2020 GHP Biotechnology Award winner for Most Innovative Chemistry Service Provider – Australia and Best in Organic Chemistry Solutions. Epichem has been inducted into the WA Export Hall of Fame.

Australia's Leading Provider of Synthetic and Organic Chemistry

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EPICHEM PTY LTD

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"EPICHEM IS HIGHLY COMMITTED TO PROVIDING SERVICES THAT EXCEED CLIENT'S EXPECTATIONS WITH REQUIRED QUALITY"

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SYNTHETIC & MEDICINAL CHEMISTRY

- Tailored Discovery/Hit to Lead projects
- IP generation
- Improve physicochemical,ADMET,PK properties
- Drug conjugates,fluorescent tags & metabolites

PRODUCTION CHEMISTRY

- Efficient analogue preparation & scale up
- Parallell Synthesis
- Pharmaceutical Reference Standard catalogue
- Impurities
- Degradants
- Metabolites of APIs &excipients

ANALYTICAL CHEMISTRY

- Routine Analysis & technical support
- HPLC,LC-MS,GC-MS,FTIR
- Stability testing
- QA expertise & consultancy
- GMP consultation

MATERIAL SCIENCE

- **OHD technology**

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MATERIAL SCIENCE

- OHD technology

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ANALYTICAL SERVICES CAN INCLUDE:

- Mineral Extractions
- Analysis of rare earths in
  - solids (ore and cakes after extraction)
  - extraction buffers
  - Lab scale development
  - Optimisation of extraction methodologies
- Forensic Investigations and Problem Solving
- Characterisation and Quantification of contaminants in oil pipelines and wash tanks- using GC-MS; LC-MS and bench chemistry methods

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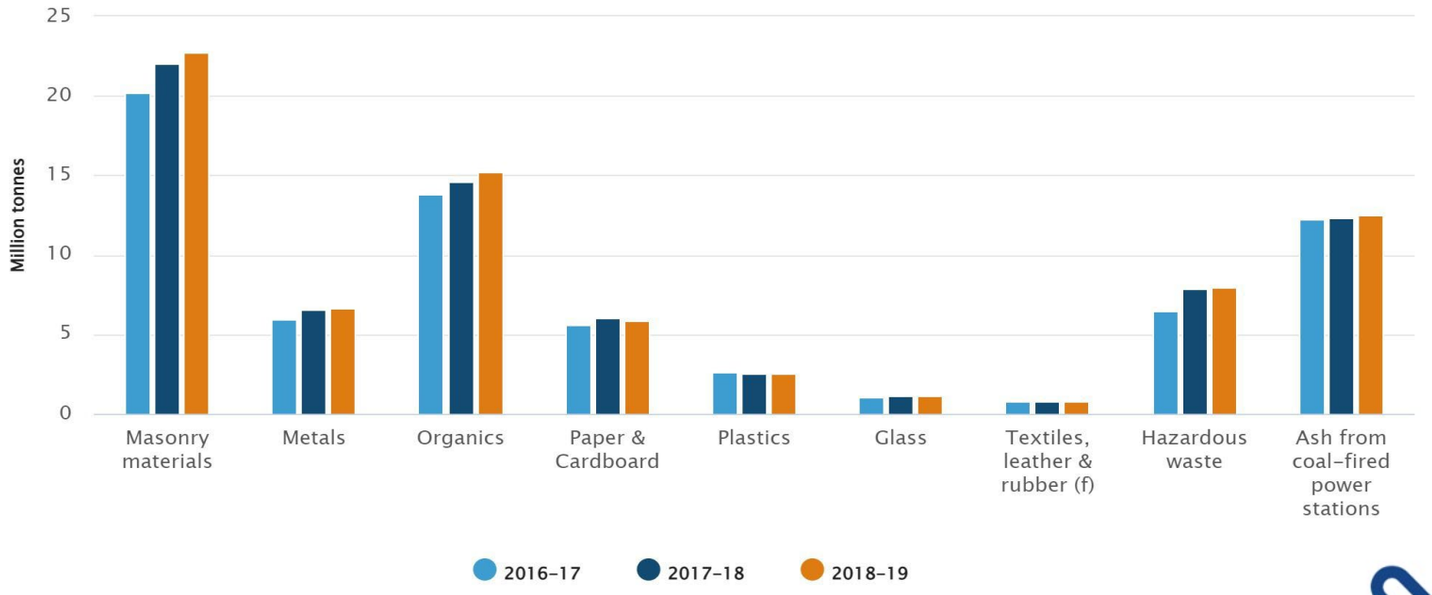
THE SITUATION WITH WASTE

An estimated 76 million tonnes of waste is generated by Australians every year

Only 27% of our waste in Australia is recycled, however waste recycling is costly, labour intensive and inefficient

Waste generation by waste material



a. Tyres are included in hazardous waste.

Source: Australian Bureau of Statistics, Waste Account, Australia, Experimental Estimates 2018–19 financial year

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SOLUTION OPTIONS INCLUDE

- **Transfer stations:**

Consolidation points where collected waste can be aggregated,compacted and loaded for transport to distant disposal sites

- **Resource Recovery Facilities:**
  - Alternative Waste Treatment facilities
  - Garden Organics Processing facilities
  - Thermal Waste technologies
  - Material Recovery facilities
  - Recycling facilities

- **Landfill**
- **OHD ??**

Table 1 Australia's distribution of waste management infrastructure (estimate at August 2013)

Jurisdiction	Landfill	Resource recovery facility	Transfer station	Total
NSW	369	121	166	656
VIC	92	233	239	564
QLD	265	88	236	589
WA	187	86	26	299
SA	117	247[1]	133	497
TAS	19	14	67	100
NT	118	10	4	132
ACT	1	6	1	8
Total	**1,168**	**806**	**872**	**2,846**

Source: Compiled by Rawtec/WCS based on jurisdictions' input

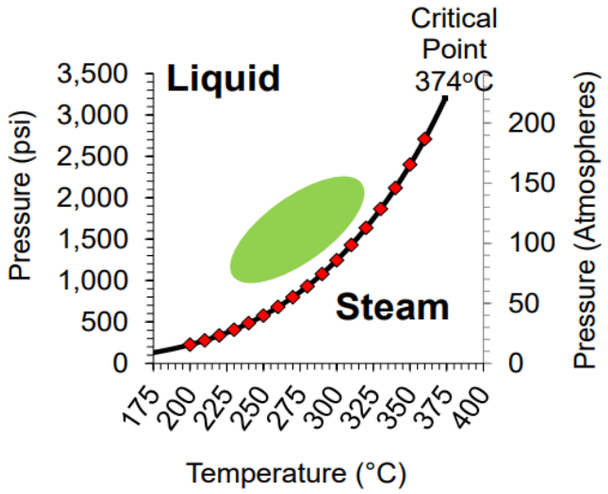
[1] - Includes 153 container deposit recycling depots in SA

WHAT IS OHD?

OXIDATIVE **H**YDROTHERMAL **D**ISSOLUTION

A novel continuous, hydrothermal process to convert macromolecular organic solids into low molecular weight organic chemicals using only:

- Elevated temperature±270°C
- High pressure ±2500psi
- Liquid water
- Molecular oxygen



WHY OHD?

Straightforward & operates at industrially feasible conditions & rates

Requires no solvents or catalysts

Green technology, produces little carbon dioxide and no nitrous and sulfur oxides

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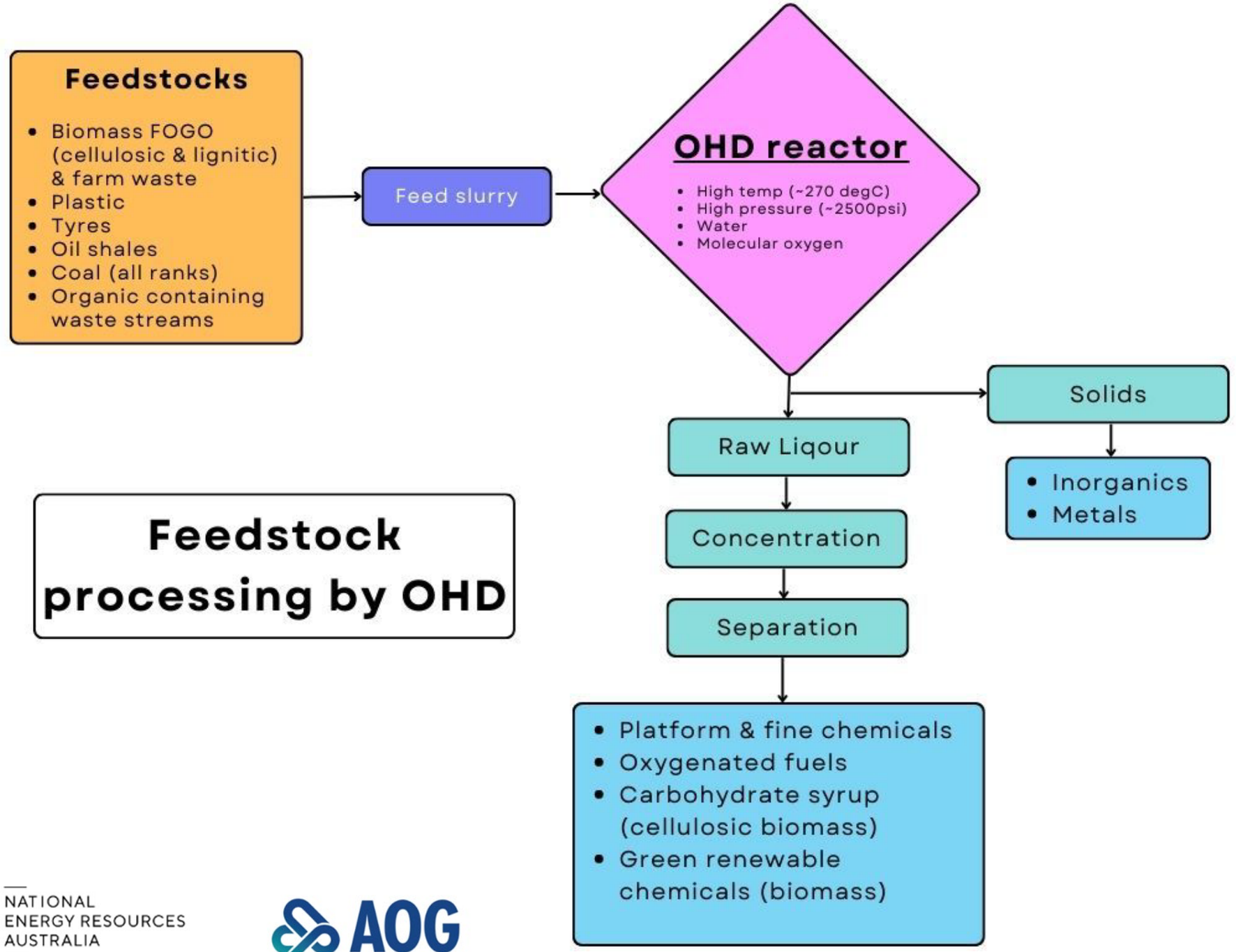

Feedstock processing by OHD

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THE BUILD

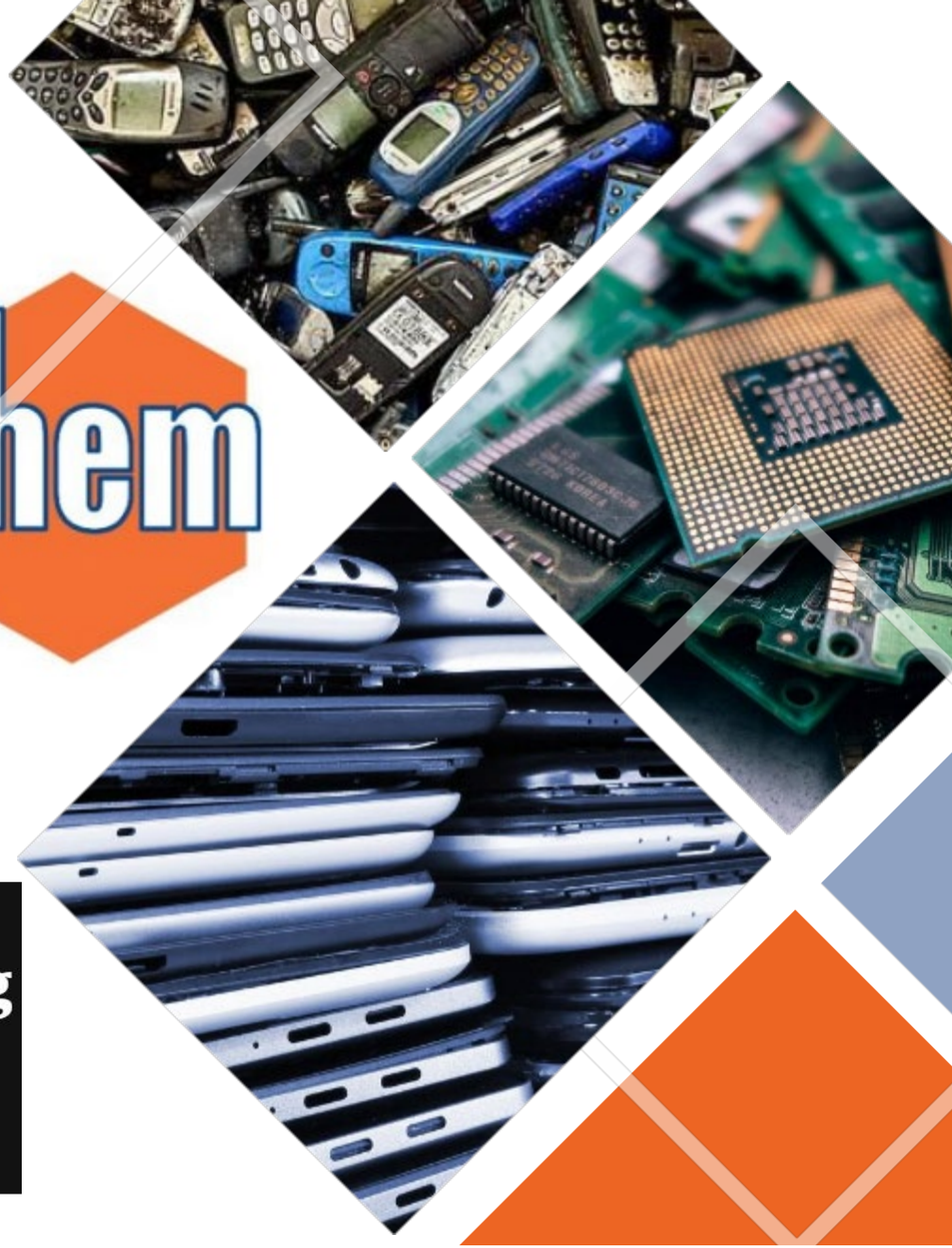

Heaters
Reactor
Cooler
Backpressure regulator
HOT SURFACE

LETS LOOK AT E-WASTE

Fastest growing waste streams in the world, expected to reach 74 million tonnes per year by 2030.

Emissions forecasted to increase by 13% by 2030 to more than 10million tonnes of CO2

Only 17.4% is effectively recycled



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OUTLOOK | 16 November 2022

Short-circuiting the electronic-waste crisis

The computers, smartphones and other technologies that define modern life are creating waste across the world. A combination of technological and policy solutions could help to limit the damage.

SCIENCE

E-waste surges in 2021 as world sends goldmine to landfill

ABC Science / By environment reporter Nick Kilvert

Posted Thu 14 Oct 2021 at 1:00am, updated Thu 14 Oct 2021 at 4:54am

Going to e-waste: Australia's recycling failures and the challenge of solar

More than 100,000 tonnes of solar panel waste are forecast to enter Australia's waste stream by 2035

by Royce Kurmelovs

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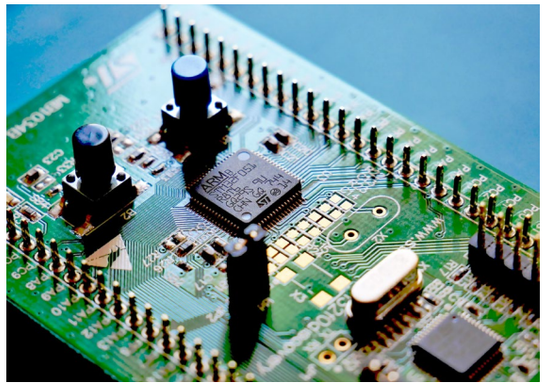
CASE STUDY : E-WASTE

- ABS plastic
- PC circuit boards
- Mobile phones
- PVC/Copper cables
- Screen 1 fines
- Trommel fines



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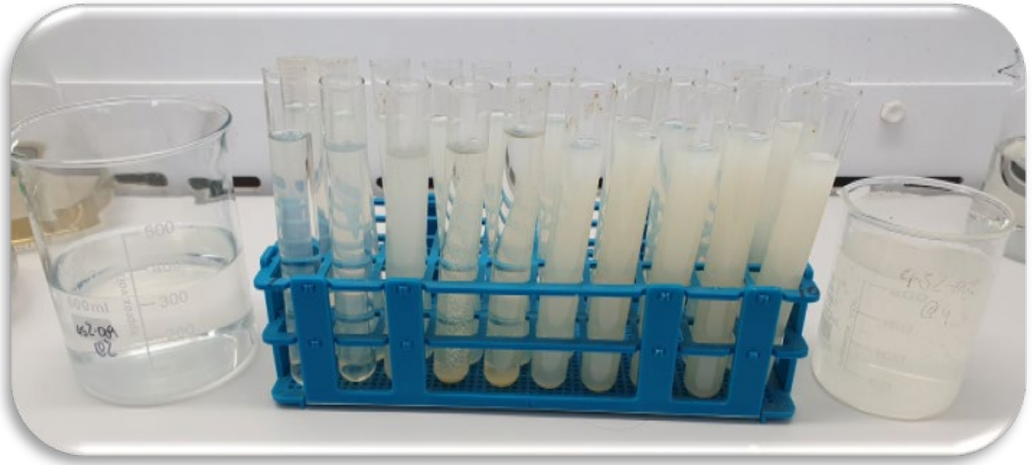
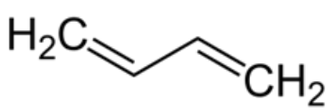
CASE STUDY : E-WASTE
INITIAL FINDINGS

ABS PLASTIC

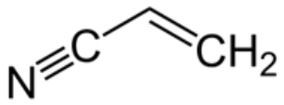
OHD PROCESSING



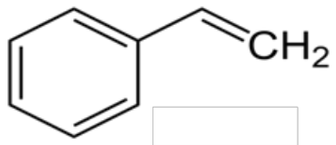
OHD LIQUOR



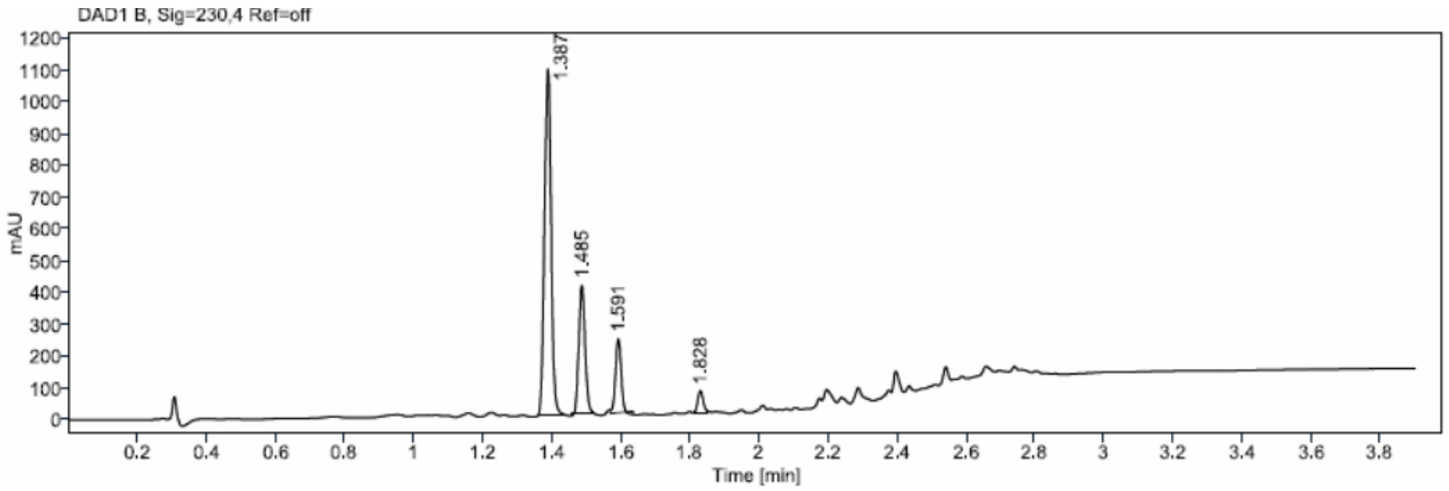
1, 3-**B**utadiene



Acrylonitrile



Styrene



CASE STUDY : E-WASTE

CONCLUSIONS

Removes plastic through oxidative dissolution concentrating the:

Major metals
- Gold
- Tin
- Copper
- Iron
- Zinc

Minor metals
- Silver
- Barium
- Nickel
- Chromium
- Magnesium
- Manganese

Converted plastics into smaller organic molecules
- Potential for biodegradibility
- Used as feedstocks

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WHAT NEXT FOR OHD

Trial different types of waste from diverse sectors:

- Coal
- Solar panels
- Batteries
- Textiles
- Anti-corrosive fim

Energy Sector | Agriculture Sector | Textiles Sector | Waste Sector | Mining Sector | Biotechnology Sector

Determine OHD processed solids biodegradability via respirometry tests

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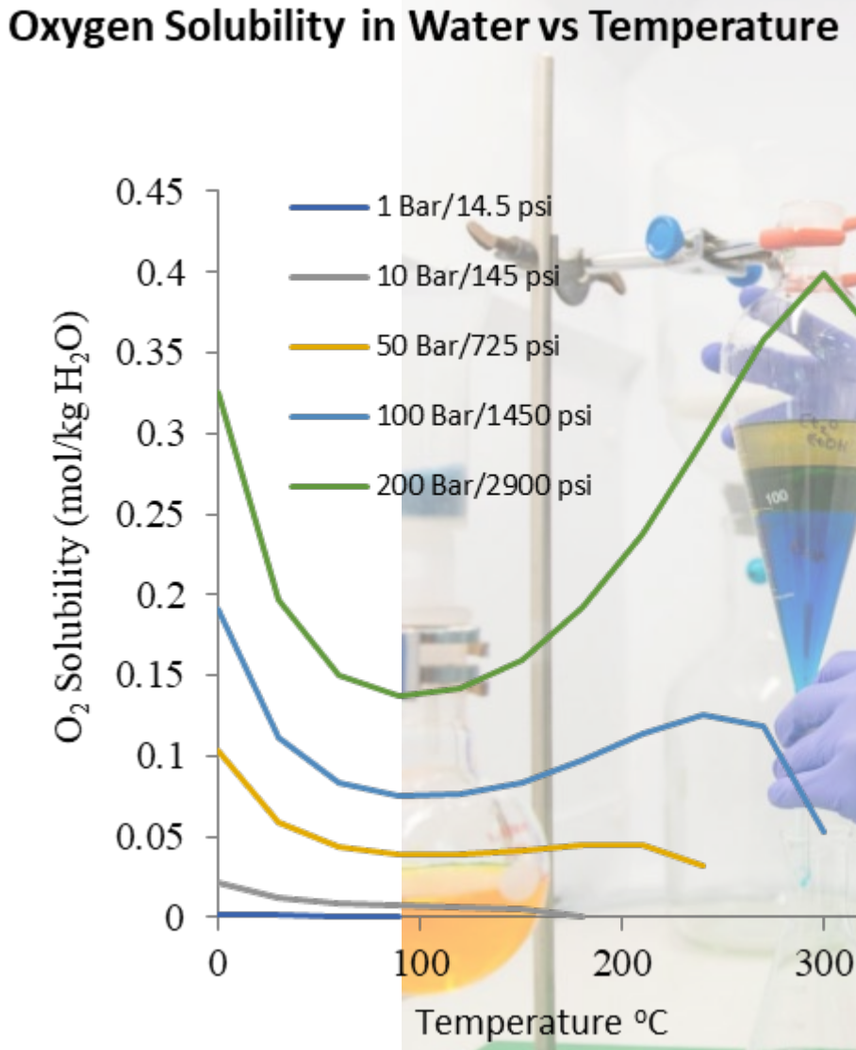
WHAT NEXT FOR OHD

Can OHD be used for innovation in minerals processing?

- Direct leaching & extraction of mineral ores
- Pre-treatment of refractory ores
- Other recovery or refining process

Can the absence of a gas phase affect oxidative process of minerals?



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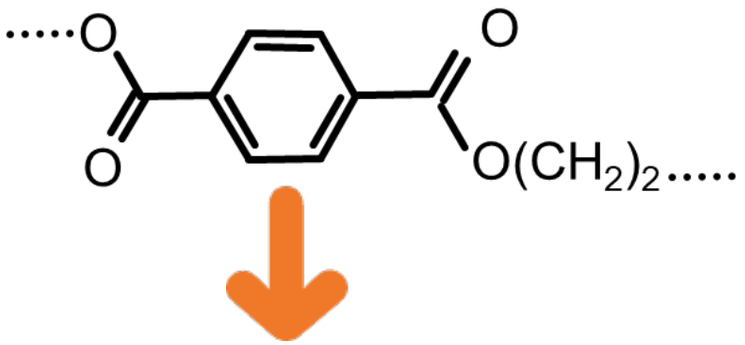
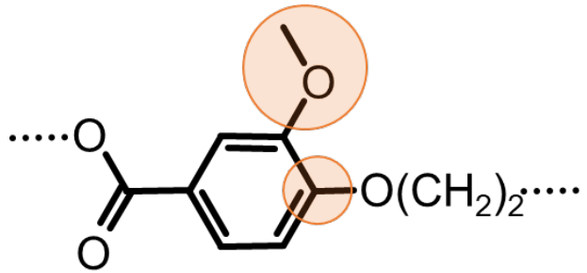
EXAMPLE

Revenue generating end user products

Polyethylene Terephthalate (PET)



Polyethylene Vanillate (PEV)



Source: Mialon et al., 2011
Lang and Kordsachia, 1981
Hirakawa 2011

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THANK YOU

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