

FACT SHEET

INCREASED RECYCLING OF PLASTICS BY SENSING AND TREATING LABEL CONTAMINATION

2021

LEAD PARTNER

PEGRAS

RESEARCH PARTNERS



INDUSTRY PARTNERS



A man wearing a yellow hard hat and a plaid shirt is working on a utility site. He is holding a tablet in his left hand and a yellow device in his right hand. In the background, there is a large electrical cabinet with various wires and cables connected to it. The scene is set outdoors, with a chain-link fence visible in the foreground. The overall image has a blue-green tint.

The NSW Smart Sensing Network has brought together a world leading team of research and industry partners to boost Australia's recycling capability.

Increased recycling of plastics by sensing and treating label contamination

Government and Industry have ambitious targets around waste and recycling. The Australian Packaging Covenant Organisation's 2025 National Packaging Targets include "100% reusable, recyclable or compostable packaging, 70% of plastic packaging being recycled or composted, 50% of average recycled content included in packaging and the phase out of problematic and unnecessary single-use plastics packaging." Many other jurisdictions are likely to increase legislation. At the moment many companies and councils are struggling to find the ways to meet expectations, and clever science and innovation can help provide the solution.

Smart sensors have an enormous role to play in the circular economy and NSW universities are at the forefront of smart sensing research, exploring new frontiers in optical, chemical and in-line sensing to deliver next-generation sensors that are wireless, networked, smaller, cheaper and more sensitive. The sorts of devices the sector will need in order to meet its targets.

The project aims to identify novel ways to sense and treat residual contaminants on HDPE chips in the recycling wash process. This will be unique worldwide and designed for industrial use for a broad range of plastics.

University of Sydney: The Key Centre For Polymer Colloids is able to undertake all manner of fundamental chemistry to sense, characterize and modify materials. They are experts in polymerization and stabilizations: key skills needed for improving plastics recycling. In the current project, the researchers have taken on the role of mastering the fundamental chemistry of contaminant removal.

The UNSW's vibrant research lab - Process Modelling and Optimisation of Reaction and Separation "ProMO Lab", work on applications across a range of complex reactive flow processes in traditional and emerging industries for developing new, cleaner and more efficient technologies, powered by advanced numerical and experimental approaches. Here, the researchers are up scaling the concepts from laboratory to pilot on the recycling facility.

This project has the potential to divert hundreds of thousands of tonnes of waste plastic from landfill.



The Institute for Sustainable Futures at UTS

work on many aspects of a viable tomorrow. Researchers and professional staff come from diverse backgrounds, including engineering, architecture, management, economics, science, the social sciences, international studies and political studies; most with prior work in government and commercial environments. In this project they bring whole-of-system thinking and circular economy policy expertise ensuring that the technical solution aligns with the broader systematic changes affecting the packaging sector.



Industry Partners



The project's industry partners are making an investment in the future by funding this research to the tune of nearly \$1.5 Million.

Labelmakers started back in 1987 printing self-adhesive labels, and grew to become Australasia's largest and most innovative label supplier. Packaging has changed considerably over the last three decades and they have developed solutions that have responded to the changing needs of our customers. Self-adhesive labels are now just one of six core labelling products. Labelmakers are supporting this project as part of their commitment to exploring opportunities that expand our business to continue to grow our offerings to our customers while remaining competitive in a global market and looking at ways to further reduce our carbon footprint.



PEGRAS Asia Pacific, is a technical solution consulting company based in NSW. For several years they have been collaborating with the NSSN and many industry partners to solve real world problems.

With a network of consultants in Australia, Europe and Asia, PEGRAS has provided solutions for various companies, including Audi, BioOil, Continental, Siemens, and TOYO.

Building on immense background knowledge of print and packaging, their business focus includes developing solutions for the Circular Economy needs of plastic recycling. PEGRAS developed the initial proof of concept chemistry that has evolved into this CRC-P project and provides a chemical and engineering lead.

To find more about the project out how the NSSN can help solve your challenges in other areas, please contact Dr Don McCallum at 0433 496 778 or don.mccallum@nssn.org.au

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