

**TECH OFFER**

**Accelerated Materials Innovation Platform For Sustainability**



**KEY INFORMATION**

**TECHNOLOGY CATEGORY:**

- Materials** - Semiconductors
- Materials** - Plastics & Elastomers
- Materials** - Composites
- Materials** - Nano Materials
- Infocomm** - Artificial Intelligence
- Chemicals** - Polymers
- Chemicals** - Inorganic
- Chemicals** - Organic

**TECHNOLOGY READINESS LEVEL (TRL):** **TRL7**

**COUNTRY:** **SINGAPORE**

**ID NUMBER:** **TO174396**

**OVERVIEW**

Traditional materials research and development (R&D) is slow, challenging, expensive and therefore limited. The iterative nature limits companies in creating revolutionary products if they do not devote significant resources to R&D, often resulting in longer time to market of new products. This technology aims to resolve such issues by enabling fast and efficient materials development.

Created with deep expertise in materials science, the technology utilises a proprietary combination of machine learning and high throughput experimentation as a method of acceleration for companies seeking to develop new materials. The platform allows users to develop new materials 10 times faster by performing rapid and smarter screening of data, design of experiments and materials creation. A key focus area the technology owner aims to create impact in is the development and application of materials that enable sustainability, particularly to resolve challenges in solving environmental waste, circular economy, energy storage, clean energy and carbon capture, utilization & storage.

The company is seeking R&D projects and collaborations with interested parties to develop new materials.

## TECHNOLOGY FEATURES & SPECIFICATIONS

The technology outperforms traditional R&D timelines by more than 10 times through performing many mini cycles of R&D within the automated systems. This serves as a shortcut in the innovation cycle, going from a problem statement to productization in a more rapid manner.

Some features of the platform include:

- Ability to derive insights and actionable intelligence from existing R&D data, embed materials science information into datasets and suggest new experiments towards a target performance
- Provide an intelligent design of experiments, that when combined with their AI tools, would efficiently and rapidly suggest new experiments towards a desired performance outcome
- Design customized high throughput experimental tools to generate vast amounts of experimental data to address a particular materials system
- Design a completely automated AI driven experimentation platform, combined with automated and high throughput experimentation

By performing high throughput experiments with enhancement by AI technology, this technology can increase R&D efficiency, and consequently reduce R&D costs.

## POTENTIAL APPLICATIONS

The technology is suitable for (but not limited to) the following types of materials:

- Nanomaterials
- Hybrid organic-inorganic materials
- Semiconductors and metal oxides
- Structured materials e.g. zeolites and metal-organic framework (MOFs)
- Polymers and gels

It is also applicable to companies seeking to create a brand-new material with a desired performance and/or optimizing existing processes.

## MARKET TRENDS & OPPORTUNITIES

There is an increasing urgency to address climate change and sustainability across industries, but the present rate of innovation is unable to match this need. This technology can be applied to a range of market segments ranging including fast moving consumer

goods, paints, coatings, adhesives, electronics, and photovoltaics. This is due to the highly generalizable and customizable nature of the platform where it offers materials as a service, customized specifically to the adopter's unique business needs.

## BENEFITS

- Realize materials that enable sustainability
- Acceleration of R&D by more than 10 times
- Digitization of R&D workflow
- Draw significant improvement to processes or materials performance
- Leapfrog the competition by innovating revolutionary products