

**TECH OFFER**

**Advanced Efficacy-Enhancing Delivery Systems for Healthcare Products**



**KEY INFORMATION**

TECHNOLOGY CATEGORY:

Personal Care - Cosmetics & Hair

Personal Care - Nutrition & Health Supplements

Chemicals - Polymers

Healthcare - Pharmaceuticals & Therapeutics

Chemicals - Bio-based

TECHNOLOGY READINESS LEVEL (TRL): **TRL9**

COUNTRY: **THAILAND**

ID NUMBER: **TO175034**

**OVERVIEW**

Delivery systems of bioactive molecules play an increasingly important role in improving human health, serving as important tools for improving the efficacy and safety of a wide range of products, including cosmetics, drugs, gene therapy vectors, and food. The technology on offer is a patented, advanced delivery system adept at transporting a wide range of bioactive molecules, making it highly valuable in both the cosmeceutical and pharmaceutical sectors.

This technology is a specially modified polymer, generating a three-dimensional nanogel structure when simply dissolved in water. The resultant material encompasses both hydrophobic and hydrophilic properties, ensuring its versatility and biocompatibility. In comparison to traditional liposome methods, this technology's self-assembling property expedites product development and obviates the requirement for expensive infrastructure or specialized tools. When combined with desired

ingredients in water, the technology offers enhanced encapsulation for active pharmaceutical ingredients (API) molecules, addressing common issues of diminished bioavailability and instability in various healthcare products. In the cosmeceutical realm, it proves particularly effective for delivering active ingredients, facilitating skin penetration while simultaneously enhancing skin hydration due to its unique base components. Beyond its cosmetic applications, the technology holds immense potential in the pharmaceutical sector. Its unique structural attributes make it a promising candidate for delivering mRNA and gene therapies.

The technology owner is interested in co-development projects, out-licensing and IP acquisition opportunities with Singapore-based personal care, healthcare, and pharmaceutical companies.

## TECHNOLOGY FEATURES & SPECIFICATIONS

The technology is a self-assembled nanoparticle polymeric colloid system, derived from chemically altered hyaluronic-based biopolymers integrated with poly(N-isopropylacrylamide).

Some features of the material include:

- Soft and flexible
- Water-soluble
- Biocompatible
- Exhibits remarkable thermodynamic stability
- Clinically proven non-irritation and hypoallergenic
- High encapsulation efficiency for API molecules
- Augmented skin fortification alongside effective API delivery
- Enhanced stability, enduring elevated temperatures and diverse pH ranges
- Environmentally friendly – uses a water-based system that negates the use of harmful solvents

## POTENTIAL APPLICATIONS

The technology can be used as an ideal delivery system for various types of molecules.

Possible applications include (but not limited to):

- Cosmeceuticals
- Pharmaceuticals
- Biomedical including drug delivery systems, mRNA and vaccines, immunotherapy
- Agriculture

## MARKET TRENDS & OPPORTUNITIES

This technology addresses two major markets – cosmetics and mRNA therapeutics. Valued at USD 262 billion (2022) and USD 40 billion (2022) respectively, with this technology's advanced delivery capabilities, it is primed to address these sectors' evolving needs of sustainable, efficacious, and personalised products.

The synergy of these sectors offers considerable potential for tapping into their growth and harnessing the benefits of the technology.

## UNIQUE VALUE PROPOSITION

- Versatile delivery system
- Self-assembling, water-based composition allows for eco-conscious product development
- Enhances penetration, stability and efficacy of bioactive molecules