

# CONSUMER CARE TECHNOLOGIES

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Our programme focuses on functional polymers & encapsulation systems to create innovations in personal care, home care & institutional cleaning.

We collaborate with industry and academia partners in exciting endeavors.

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# MEDIA HIGHLIGHTS



Leveraging on our patented thermogel and encapsulation technologies, we co-created IRÉN - Ikeda Group and A\*STAR first commercial skincare range. The range consists of seven serums each performing a specific function. Customised, multi-functional skincare is achieved by mixing desired serums together without neutralising any ingredient. IRÉN demonstrates protection of actives, effective skin penetration and sustained delivery.



Common household cleaning products contain harmful chemical biocides which can cause bacteria resistance and environmental damage. Harnessing IMRE polymer bank, IMRE-LION scientists researched on multi-functional, environmentally friendly and nature-derived polymers. A customisable base polymer can be modified with various polymer chains to meet specific demands. Anti-odour and anti-bacteria properties can be achieved in a single molecule.



A\*STAR has partnered ést.lab, Estetica's in-house skincare brand, to develop the SKAI™ [Skin Analytics and Ingredients] Matrix, a proprietary framework used to evaluate a wide spectrum of active ingredients and materials which guide the selection and formulation of the most relevant and efficacious products in skincare cosmetics. Through science, data analytics and rigorous clinical trials, this partnership has enabled ést.lab to produce multi-award winning skincare ranges that have won local and global acclaim.



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# OUR TECHNOLOGIES

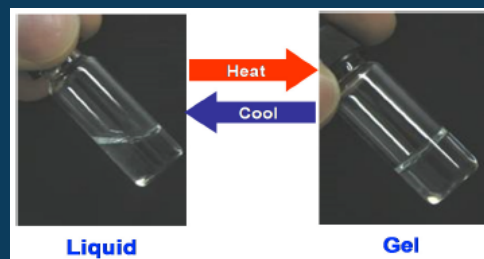
## 1 Encapsulation & Formulation

Effective encapsulation systems protect active ingredients and ensure their delivery to specific targeted sites. Enhanced efficacy and stimuli-responsive properties can be achieved.

Applications: Skincare, hair care, oral care, fabric care, surface care and dietary products.



## 2 Biodegradable Thermogels



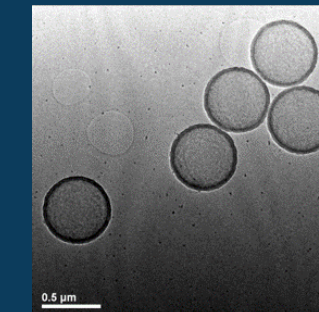
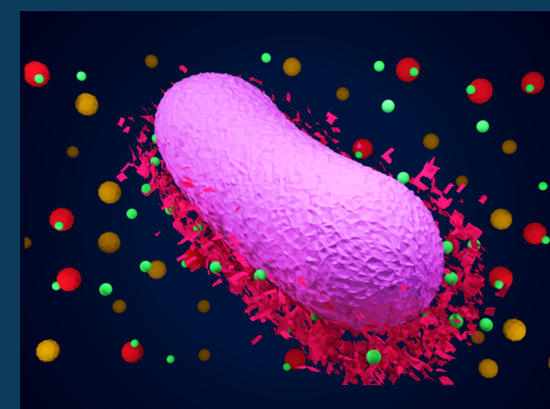
Thermogels are temperature sensitive hydrogels which can macro-encapsulate hydrophobic and hydrophilic active ingredients. At higher temperatures, sol-gel transition occurs and the cargo is delivered steadily over time. Our thermogels are biodegradable, biocompatible, and require small polymer concentrations for gelation.

Applications: Skincare and dietary products

## 3 Antimicrobial Polymers

Certain anti-microbial agents in consumer and healthcare industry are hazardous and lead to anti-microbial resistance. We developed a library of cationic polymers which kills Gram-positive and Gram-negative bacteria. Our polymers work via membrane disruption and only small concentrations are necessary. Our polymers are biocompatible and non-hemolytic.

Applications: Skincare, hair care, fabric care and surface care



## 5 Green Material- Lignin

Lignin, a biodegradable and sustainable material, is a byproduct of paper pulp industry. Lignin demonstrates good anti-UV, antioxidant and anti-microbial properties. Lignin also serves as an effective reinforcement filler to improve mechanical properties for biomedical applications

Applications: Skincare and surface care



## 4 Hollow Silica Capsules

Hollow silica capsules ensure secure encapsulation and extend shelf life of active ingredients. Various polymer coatings can be added to enable triggered release via pH, thermal and dilution.

Applications: Skincare, hair care, fabric care and surface care



## 6 Nanodiamond & Fullerene

Widely explored for biomedical applications and beyond, nanodiamond and fullerene are highly versatile and biocompatible. These nanocarbon materials possess potent antioxidant and anti-UV properties, which can be harnessed for skincare. Unlike common chemical sunscreens, these nanocarbons do not degrade under sunlight and show lasting efficacy.

Applications: Skincare and surface care

