



PROF CHO NAM-JOON

School of Materials Science and Engineering

✉ njcho@ntu.edu.sg

Bioinspired Food Materials; Food Colloids and Interfaces; Sensing and Diagnostics for Food Safety; Biopolymer and Lipid Delivery Systems; Sustainable Agri-food Materials

Our research integrates bioinspired materials science, soft-matter biophysics, and interfacial engineering to address challenges across the food value chain, from ingredient functionality to safety and sustainability. We investigate natural biopolymers and colloidal systems (e.g., plant polysaccharides, pollen-derived materials, lipid assemblies, and protein interfaces) to design tunable delivery platforms, functional coatings, and advanced sensing technologies relevant to food and nutrition. Our work also focuses on membrane-active peptides and lipid-based biosensing strategies for rapid detection of contaminants, toxins, and spoilage markers. Through the broader Cross Economy framework, we further explore the transformation of underutilized biomass into high-value food-compatible materials, supporting circularity, safety, and resource efficiency across agri-food systems.

Potential Areas for Collaboration

- We welcome collaborations in functional food ingredient design, biomimetic encapsulation and delivery technologies, and advanced sensing platforms for food safety and quality monitoring.
 - Additional areas include sustainable processing of agricultural byproducts into food-grade materials, interfacial science of complex food systems, and translation of bioinspired materials into scalable industrial solutions aligned with sustainable and resilient food systems.
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