



Kémiai Szakbizottság

Elnök: Juhászné Csapó Edit

Fizikai-Kémiai és

Anyagtudományi Munkabizottság

Elnök: Sápi András

Titkár: Janovák László

Meghívó

2026. szeptember 16. (szerda) 10:00-11:00

Helyszín: A Szegedi Akadémiai Bizottság székháza, Szeged, Somogyi u. 7.
110. terem

Dr. Li Li

Gulbali Institute Charles Sturt University and Australian Institute for Bioengineering
and Nanotechnology, The University of Queensland

***"Responsive Biominerals: A Next-Generation Platform for
Precision RNA Technologies in Medicine and Agriculture"***

című előadására

*(Az előadás angol nyelvű összefoglalója, ill. az előadó rövid szakmai életrajza alább
található)*

Minden érdeklődőt szeretettel várunk!

Responsive Biominerals: A Next-Generation Platform for Precision RNA Technologies in Medicine and Agriculture

Associate Professor Li Li

Gulbali Institute, Charles Sturt University, NSW, Australia

*Australian Institute for Bioengineering and Nanotechnology, The University of Queensland,
QLD, Australia*

e-mail: lili@csu.edu.au

Abstract

RNA technologies are transforming medicine and agriculture, with applications ranging from gene therapy and mRNA vaccines to RNA interference-based control of crop pests and pathogens. However, RNA molecules are highly susceptible to degradation and face biological barriers that limit their stability, uptake, and targeted delivery.

This seminar will present our research on responsive biominerals, including layered double hydroxides, calcium phosphate, and biomineral–polymer hybrids, as versatile RNA delivery platforms. These materials can protect RNA payloads and be programmed to respond to biological triggers such as pH, enzymes, ionic conditions, and competing molecules, enabling controlled and site-specific release.

In medical applications, we are developing biomineral systems for mucosal and intracellular delivery of therapeutic RNA, with potential applications in gene therapy, mRNA vaccination, and gene silencing. In agriculture, these platforms can enhance the stability, retention, uptake, and sustained release of double-stranded RNA for precision crop protection. By integrating materials science, nanotechnology, molecular biology, and agricultural science, responsive biominerals offer a promising foundation for safer, more effective, and sustainable RNA-based technologies.

Biography

Dr Li Li is an ARC Industry Fellow and an Associate Professor at Charles Sturt University. She is also a group leader and Honorary at the Australian Institute for Bioengineering and Nanotechnology (AIBN), The University of Queensland (UQ). She leads a multidisciplinary research group to develop programmable biomineral nanomaterials for precision delivery and sustainable release in healthcare and agriculture. Her expertise spans from precision nanomedicine and RNA interference (RNAi) technologies for vaccines and multimodal targeted therapies to sustainable agricultures such as Nano-RNAi for pest control and sustainable-release fertiliser, to biowaste conversion. She has built strong linkages with agricultural industries and received several awards including an ARC IM Fellowship, Advanced QLD Industry Fellowship, Wilson Churchill Fellowship, QLD International Fellowship, and ATSE Early Career Fellowship.

