



MSE Seminar:

The fed-X Approach: The role of Formulation, Encapsulation and Delivery in our Agri-food, Biomedical and Circular economy

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Abstract

Formulation, encapsulation and delivery (fed) of bioactive agents ensure that labile compounds and beneficial microorganisms are protected during transport through the gastro-intestinal tract. The fed-approach also endows greater functionality to these bioactives through controlled, sustained and targeted delivery. For instance, controlled release of drugs has been shown to enhance drug bioavailability, thus allowing drug dosages and dosing frequency to be reduced. This addresses to a \$11.2 billion (by 2030) market by improving patient compliance towards their medication. In the agri-food sector, the targeted delivery of nutraceuticals and probiotics to the intestinal tract can also promote health benefits, especially in aquaculture where immature fingerlings are exceptionally susceptible to disease. Healthier fingerlings not only reduces mortality rates, but are also postulated to grow more rapidly during the grow-out phases until they are ready to be harvested as food. In achieving a circular economy, the team is also exploring how nature-derived and generally-regarded-as-safe (GRAS) polymers can be upcycled from wastes to be developed into new encapsulation materials. In summary, this presentation shall review how the fed-approach will progressively shape the agri-food, biomedical and circular economies (fed-X).

Biography

Dr Joachim Loo is Professor in the School of Materials Science and Engineering (MSE), Nanyang Technological University (NTU), Singapore. He holds a joint appointment at the Singapore Centre on Environmental Life Sciences Engineering (SCELSE) and a courtesy appointment with the Lee Kong Chian School of Medicine (LKCMed). His research interests include designing and developing delivery systems for agri-food and biomedical applications. He has published over 200 international journal papers, three book chapters and filed more than 20 patents, of which several have been licensed. He has also spun-off two companies from his fed- techniques. More recently, his fed- approach to mitigate leaching of amino acids in fish feeds was awarded the Singapore Food Agency (SFA) Science Excellence Award. In his non-research role, he serves as Associate Dean (Students) at the College of Engineering (NTU), and as co-convenor of the ISO/TC 229 Nanotechnology National Working Group (WG3), under the Singapore Chemical Industry Council.

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MSE Meeting Room ([N4.1-01-28](#))

Please register [here](#).

Hosted by: Associate Professor Chew Sing Yian