



**Seminar Topic:  
Delivering The Cargo: A Peek Into Delivery Systems From Agro-Food To  
Biomedical Applications**

**Associate Professor Joachim Loo**

**Abstract**

Delivery systems find their use in a broad range of applications – as a protective carrier for bioimaging agents, drugs, fertilizers, fragrances, flavours, nutrients, and pesticides, i.e. agro-food and biomedical applications. By altering the properties of these particulate systems, triggered, controlled and sustained release of the encapsulated agents can be achieved. Such systems are therefore highly versatile and robust, and can be functionalized for agro-food and biomedical applications. Among the many agro-food applications, the delivery of nutraceuticals is one key aspect which is of interest to the agro-food industry. Nutraceuticals, as a broad umbrella term, can be used to describe any product derived from food sources with known health benefits in addition to the basic nutritional value found in food. They can be exploited to promote general well-being and/or control symptoms, and can be administered as supplements or additives in formulating fortified food. In addition, it is one of the key candidates currently explored as alternative or adjunctive therapy, whether to overcome the side effects or to act in synergy with drugs. Unfortunately, being of plant origin, most nutraceuticals are labile compounds and suffer from the disadvantages of bioactivity loss and poor bioavailability. This opens an avenue for the need to encapsulate these sensitive compounds through the use of delivery technologies. In this presentation, we will discuss about the use of food-based enteric-coated, nano-carriers for targeted delivery of nutraceuticals to specific parts of the gastro-intestinal tract (GIT), with the aim of increasing bioavailability and enhancing efficacy. In addition, we will also look at other encapsulation technologies which have been utilized for pharmaceutical purposes, as anticancer agents, for wound healing, in infectious diseases or for the treatment of Parkinson's disease.

**Biography**

Dr Joachim Loo is an Associate Professor in the School of Materials Science and Engineering (MSE) and holds a joint appointment at the Singapore Centre for Environmental Life Sciences Engineering (SCELSE). His research interests include drug delivery systems, tissue engineering, nanotoxicology, solar fuels and microbial biofilms. He is also a member of the Coordinated Research Project (CRP) under the International Atomic Energy Agency (IAEA), United Nations (UN). He has served as Secretary of the Materials Research Society of Singapore (MRS-S), is a founding member of NanoSing, and a member of the American Nano Society. He is currently a co-convenor of the ISO/TC 229 Nanotechnology National Working Group (WG3), under SPRING Singapore.

**Wednesday, 12 September 2018 || Time: 2:00 pm – 3:00 pm  
Venue: MSE Meeting Room (N4.1-01-28)  
Hosted by: Assistant Professor Czarny Bertrand Marcel Stanislas**