



## Ken Cham-Fai Leung

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**Novel dendritic and polymer hybrid nanomaterials towards drug delivery**

**P**oly(vinyl)alcohol (PVA) has been employed as a chemoembolization agent. Herein, PVA hybridized iron oxide nanoparticles were used for magnetic resonance imaging and anti-cancer drug delivery towards liver cancers. Type III-B rotaxane dendrimers (T3B-RDs) are hyperbranched macromolecules with mechanical bonds on every branching unit. Here we demonstrate the design, synthesis, and characterization of first to third (G1–G3), and up to the fourth (G4) generation (MW > 22,000Da) of pure organic T3B-RDs and dendrons through the copper-catalyzed alkyne–azide cycloaddition (CuAAC) reaction. By utilizing multiple molecular shuttling of the mechanical bonds within the sphere-like macromolecule, a collective three-dimensional contract -extend molecular motion is

demonstrated by diffusion ordered spectroscopy (DOSY) and atomic force microscopy (AFM). The discrete T3B-RDs are further observed and characterized by AFM, dynamic light scattering (DLS), and mass spectrometry (MS). The binding of chlorambucil, a drug for leukemia treatment, and pH-triggered switching of the T3B-RDs are also characterized by NMR spectroscopy.

### Speaker Biography

Ken Cham-Fai Leung is an Associate Professor and Programme Director at the Department of Chemistry, The Hong Kong Baptist University (HKBU), Hong Kong SAR, P. R. China. He concurrently holds the Honorary Associate Professorship at the Faculty of Dentistry, The University of Hong Kong (HKU). He conducted a three-year postdoctoral research work in the laboratory of Nobel Laureate in Chemistry, Professor Sir J. Fraser Stoddart. He has published over 100 research papers in peer-reviewed international journals with over 4,500 times of citation and an h-index of 35.

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