

## Seminar

### ■ SPEAKER

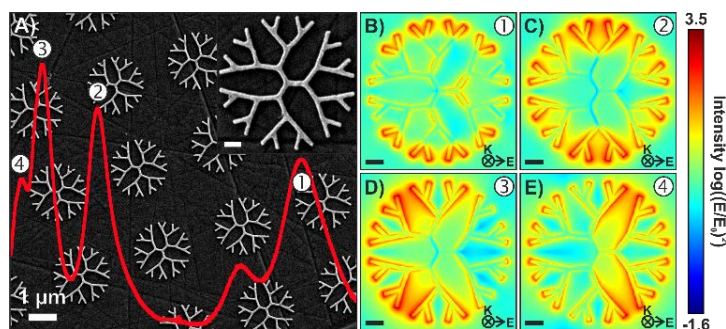
Prof. François Lagugné-Labarthe (Western University)

### ■ TITLE

Fractal Plasmonics: Optical Properties from the Visible to the mid-IR Spectral Range

### ■ ABSTRACT

Metallic nanostructures that exhibit tunable plasmon resonances on a broad spectral range are of particular interest for a variety of optical processes where the excitation and/or the emission could be enhanced. We explore here the properties of fractal metamaterials that have resonances spanning from the visible to the mid-infrared range that can be exploited for a variety of applications including sensing applications and nonlinear optics. Surface-enhanced Raman spectroscopy and surface-enhanced infrared absorption are used to probe a variety of surface and interfacial enhancements. Electron Energy Loss spectroscopy (EELS) is also a key technique to reveal optical modes and how they hybridize along the different fractal generations. In this seminar, we present several metastructures based on fractal geometries that exhibit multiple localized surface plasmon resonances across the Visible to the mid-infrared spectral regions. [1-4]



A) SEM image of fourth-order three branched dendritic fractals. Overlaid on the image is the infrared absorption spectrum of the structure. B-E) Finite difference time domain calculations of the electric field distribution at wavelengths corresponding to the numbered resonances.

### ■ DATE AND VENUE

February 4, 2019 (Tuesday, 4:00 - 5:00)  
Seminar Room A (116), KU R&D Center

### ■ INVITED BY

Professor Seok-Cheol Hong