

UniSysCat - Colloquium

Prof. Hoi Ri Moon

Department of Chemistry, Ulsan National Institute of Science and Technology

Start Time: Wednesday, May 5, 2021 05:00 pm

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Online Colloquium

Flexible Metal-Organic Frameworks: Design, Synthesis, Characterization and Applications

Hoi Ri Moon

Department of Chemistry, Ulsan National Institute of Science and Technology

Rational and creative design of organic and metal building blocks has successfully enabled the genesis of variety of coordination polymers or metal-organic frameworks (MOFs) that are of fundamental scientific importance as well as provide a myriad of practical applications including gas storage and separation, catalysis, and sensing. One of the most attractive features in MOFs is flexibility, which has attracted great attention, because they show distinctive properties that cannot be achieved with rigid MOFs and other porous inorganic materials. In this talk, we will present synthetic strategies that exploit flexible MOFs and their interesting properties. Especially, responsive MOFs upon external stimuli such as light irradiation, gas adsorption/desorption, and specific organic molecule sensing will be introduced in the aspect of their interesting adsorption behaviors and the unique catalytic properties. In addition, we developed the interesting system for hydrogen isotope separation, having a high uptake with the highest reported separation factor as high as ~ 26 at 77 K. Finally, novel MOF-on-MOF composites will be introduced, which were achieved by a joint computational/experimental workflow that screens thousands of metal-organic frameworks (MOFs) and identifies the optimal MOF pairs, and their potential applications were explored as gas sensing materials.

Prof. Dr. Christian Limberg

Organizer

