The wind environment and air ventilation in urban regions of HK

Invited Speaker: Dr. Steve H.L. Yim， Research Associate of MIT
Date & Time: 18:00-19:30pm, 30Nov(Wed)
Venue: DTLab, 7/F, Wong Foo Yuan Bldg, CUHK

Abstract: Air pollution is a common problem in urban environments. This issue is partly caused by unfavorable morphology which deteriorates air ventilation and inhibits pollutant dispersion. Since Hong Kong is a city with one of the highest building densities, this lecture focuses on HK as an example to discuss air ventilation in urban region. HK has a land area of 1,054 km2 and a population density of 6480 people per square kilometer and thus high-rise building development becomes more prevalent to reduce demand for land. According to recent measurements from the Hong Kong Observatory, the background station records 6.2 m/s annual wind speed, while the data collected at urban stations shows 2.1 m/s. The blocking effect brought about by buildings accounts for this difference of a factor of 3 on the annual wind speed. Research studies found that the urban ventilation in inner city areas is associated with the height, alignment and density of buildings. However, numerous “wall-effect” buildings are common in HK and consequently these buildings could degrade the ventilation extent in the urban core. His lecture will cover the background wind environment in HK, the factors and impacts of air ventilation degradation, as well as several measures and tools of ventilation quantification.