香港城市大學
City University of Hong Kong

Providing solution to mitigation of criteria air pollutants via cooperative learning

Project Number: 6000716

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Abstract:

Air pollution has been attracting escalating concern worldwide due to its extraordinarily lethal impact. The emissions of one typical criteria air pollutant, nitrogen dioxide (NO2), alone are associated with about 38,000 premature deaths globally in 2015. Mitigating ambient NO2 pollution has thus been a highly sought-after, especially in congested cities like Hong Kong, but extremely challenging task due to its ppm level concentration in air. The roadside NO2 concentration in Hong Kong is particularly high – often measured to be over 100 μg/m3 and well above the WHO standard (40 μg/m3) due to the high-density of vehicles and crowded infrastructure, making NO2 pollution a pressing and representative local air pollution problem. This project will enable students via cooperative learning to appreciate the urgency and significance in tackling air pollution issues, NO2 in particular, learn the basic knowledge in developing adsorption technology to mitigate air pollutants from environmental hotspots, tailor-design key components of adsorption technology (materials and processes) in the lab, practice the developed technology, and assess the performance of the technology in addressing real-world air pollution issues. The design of this project takes advantage of PI Shang's unique research capacity in Hong Kong in developing adsorption technology for gas separation and the favorable background of students in School of Energy and Environment. The success of this project will strengthen the leading positon of the School and CityU as a whole in education, research, and service in environmental science and engineering in Hong Kong and in Asia Pacific region. Through the course-lab-teaching based implementation, the students will grasp the fundamental knowledge and hands-on know-how to address tangible air pollution issues, foster teamwork spirit via cooperative learning and effective follow-up assessments, be equipped with a tech brain, and gain confidence in providing solutions to real-world challenges through materializing their knowledge into technology. The successful incorporation of the Discovery and Innovation-enriched Curriculum will raise students' enthusiasm in applying science and engineering know-how to address a series of energy and environmental issues by innovative design in their future endeavor.

Academic Publication:

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