

THE EDUCATION UNIVERSITY OF HONG KONG  
FACULTY OF LIBERAL ARTS AND SOCIAL SCIENCES

**Research Output/Impact/Knowledge Transfer Prize**  
**for the Dean's Research Fund 2018-19**

**Brief Introduction of Awardee's**  
**Research/KT Publication/Study/Output and Future Research/KT Development**

<b>Awardee (Dept):</b>	<u>Dr. Ho Wing Kei, Associate Professor (SES)</u>
<b>Publication Title/KT project:</b>	<u>Environmental monitoring, air pollution control and application of nanomaterials in air purification</u>

- A. *Briefly introduce your research/KT publication/study/output for which you have received the prize.*

Through the support from the ECS and GRF from the government funding and research collaboration with industrial partners, different strategies were used to overcome the weaknesses of “conventional” photocatalytic technology. The novel LED activated photocatalyst graphitic carbon nitride (g-C<sub>3</sub>N<sub>4</sub>) was developed which provides an innovative solution for long-term air purification and disinfection functions in the indoor environment without consuming any energy. Compared to traditional TiO<sub>2</sub> photocatayst, which requires UV light activation, solely visible light or indoor lighting (i.e. visible light) condition can activate the new carbon nitride material to degrade air pollutants and bacteria. This energy-saving and environmentally friendly technology is a breakthrough that opens up a new possibility of applying visible light (e.g. LED lighting) in photocatalysis. It also has a wide range of potential applications in air purification and disinfection contexts in daily life. This research results won international recognition for the innovations in environmental technology fields, grabbing a gold medal at the International Invention Innovation Competition in Canada (iCAN) held in Toronto in September 2018. The developed technologies is planning for patent application and technology transfer to the industrial partners for production commercialization.

Extensive publications in environmental monitoring, air pollution control and application of nanomaterials in air purification) are disseminated in the past two years. Dr. Ho published over 125 peer-reviewed leading international journals which are totally cited 12600 times by others since 2001, and h-index = 58. In the past two years, he published 33 peer-reviewed leading international journals since 2015, including 16 publications in the capacity of corresponding author. Over 20% of these published journals ranked within the top 2% and almost half of them ranked within top 5% in their respective disciplines including the peer-reviewed leading international journals (e.g. *Applied Catalysis B: Environmental* and *Chemical Engineering Journal* which rank 1<sup>st</sup> and 3<sup>rd</sup> in the Environmental Engineering discipline).

Dr. Ho has been named in the list of “Highly Cited Researchers 2018” among the world’s top researchers. Highly Cited Researchers (HCR) from Clarivate Analytics (formerly

known as the Intellectual Property and Science Business of Thomson Reuters) is an annual list recognizing influential researchers in the sciences and social sciences from around the world. These researchers have distinguished themselves by publishing a high number of papers that rank in the top 1% most-cited in their respective fields over a recent 11-year period based on objective citation statistics in science and social sciences journals indexed in the Web of Science Core Collection which stands as the most authoritative compendium of influence and visibility in worldwide research. Such consistent production of highly cited reports indicates that the work of these researchers has been repeatedly judged by their peers to be of notable significance and utility.

Research achievement was also made contribution in the collaborative research. Since 2016, Dr. Ho was participated in the collaborative project “納米光催化大氣污染控制技術研究與示範應用” as the key project member and co-investigator with the Chinese Academy of Sciences in the National Key Research and Development Program of China (國家重點研發計畫納米科技重點專項) **with** funded amount of RMB 19.34 million dollars **by Ministry** of Science and Technology of the People’s Republic of China (中華人民共和國科學技術部) from 7/2016 to 6/2021 (2016YFA0203000). This 5-year project aims to improve the air quality of China through the development of new anotechnology. The project deliverables include the development of effective air purification technology and setting up national standard for air cleaning.

*B. How you used/will use your prize and perhaps its usefulness to your research/KT development?*

The fund would be used to hire research staff to obtain preliminary experimental results for the application of a new GRF.

*C. Expected research/KT outcomes/outputs/impacts arising from this prize.*

The data collected from this fund will support the development of a new GRF proposal.