

[Keynote Talk]: Photocatalytic Cleaning Performance of Air Filters for a Binary Mixture

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Abstract : Ultraviolet photocatalytic oxidation (UV-PCO) technology has been recommended as a green approach to health indoor environment when it is integrated into mechanical ventilation systems for inorganic and organic compounds removal as well as energy saving due to less outdoor air intakes. Although much research has been devoted to UV-PCO, limited information is available on the UV-PCO behavior tested by the mixtures in literature. This project investigated UV-PCO performance and by-product generation using a single and a mixture of acetone and MEK at 100 ppb each in a single-pass duct system in an effort to obtain knowledge associated with competitive photochemical reactions involved in. The experiments were performed at 20 % RH, 22 °C, and a gas flow rate of 128 m³/h (75 cfm). Results show that acetone and MEK mutually reduced each other's PCO removal efficiency, particularly negative removal efficiency for acetone. These findings were different from previous observation of facilitatory effects on the adsorption of acetone and MEK on photocatalyst surfaces.

Keywords : by-products, inhibitory effect, mixture, photocatalytic oxidation

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