FESE's Best Papers of 2015

© Higher Education Press and Springer-Verlag Berlin Heidelberg 2016

Frontiers of Environmental Science & Engineering is pleased to announce the best paper awards for 2015. In 2015, we published 118 research and review papers in Volume 9 of *FESE*. In order to acknowledge the past contributions and encourage more submissions, the *FESE* editorial board selected three distinguished papers for their profound insights into current serious environmental issues or contributions to practical treatment technology. We hope these papers will inspire and promote innovation in the environmental science and engineering research field.

Following are the titles and abstracts of the three best papers of 2015:

Qian ZHANG, Fengkui DUAN, Kebin HE, Yongliang MA, Haiyan LI, Takashi KIMOTO, Aihua ZHENG. Organic nitrogen in PM_{2.5} in Beijing. *Front. Environ. Sci. Eng.* 2015, 9(6): 1004-1014. DOI: 10.1007/s11783-015-0799-5

Air pollution is a serious issue in China. Nitrogenous species including organic nitrogen and inorganic nitrogen are important components in PM_{2.5}. They adversely impact human health and climate change, and reduce visibility. This study determined the temporal variation of nitrogenous species in PM_{2.5} in Beijing. The organic nitrogen was found to be one order of magnitude higher than other places in the world and they can have potential adverse effects on urban air quality and human health. The study provided important data set for in-depth understanding of the role of organic nitrogen on haze formation, and for developing control strategies.

Kyle E. MURRAY, Erin I. Manitou-ALVAREZ, Enos C. INNIS, Frank G. HEALY, Adria A. BODOUR. Assessment of oxidative and UV-C treatments for inactivating bacterial biofilms from groundwater wells. *Front. Environ. Sci. Eng.* 2015, 9(1): 39-49. DOI: 10.1007/s11783-014-0699-0

Traditional field-scale treatment for preventing from biofilm buildup in groundwater wells consists of physical agitation but this is only a temporary solution. If the biofilms colonize the wells, they must be abandoned and replaced. Murray et al. proposed a novel approach in which H₂O₂ is applied to prevent *in situ* growth of biofilms. The experiments results revealed that biofilm densities were reduced up to 3.1 orders of magnitude below baseline conditions.

Ana PICADO, Susana M. PAIXÃO, Liliana MOITA, Luis SILVA, Mário S. DINIZ, Joana LOURENÇO, Isabel PERES, Luisa CASTRO, José Brito CORREIA, Joana PEREIRA, Isabel FERREIRA, António Pedro Alves MATOS, Pedro BARQUINHA, Elsa MENDONÇA. A multi-integrated approach on toxicity effects of engineered TiO₂ nanoparticles. *Front. Environ. Sci. Eng.* 2015, 9(5): 793-803. DOI: 10.1007/s11783-015-0775-0

There is much concern today about the exposure of aquatic species to nanoparticles as a result of their increased used in homes and by industry. This study evaluated the effect of the commonly used TiO₂ nanoparticles on a wide range of aquatic species from different trophic levels, such as fish, bacteria, algae, and crustaceans. Using a battery of tests specific for each organism, the most sensitive species was found to be algae, but they were also found to be toxic to bacteria and crustaceans. The results indicated that more studies are needed to determine the safety, discharge standards for nanoparticles and cleanup goals for contaminated sites.

Jiming Hao and John C. Crittenden
Editors-in-Chief

May 20, 2016