Presentation on Advanced Water Treatment Technologies

Presented by

Dr. Amer S. El-Kalliny

Abstract

The increase in population and the expansion of urbanization and industrialization, combined with intensified agricultural activities, are the main causes for the increased environmental problems, in particular water pollution. The problem of water pollution has increased. It negatively affects economic growth as well as the physical and environmental health and quality of life. All these facts should be sufficient to mobilize the world action about not only water quantity, but also water quality. In addition, although the currently implemented water/wastewater treatment technologies are efficient to remove the majority of contaminants from water bodies, the potential formation of carcinogenic by-products might limit water reuse, particularly in agricultural activities and crops growing. Consequently, there is a need to develop cost-effective, advanced technologies for water and wastewater treatment that are able to treat a large variety of water contaminants. Therefore, Advanced Water Treatment Technologies (AWTT) Group, Water Pollution Research Department, National Research Centre (NRC), Egypt has mainly three hot topics for research: (i) Advanced Oxidation Processes (AOPs), (ii) Adsorbents of high adsorption capacity, and (iii) Membrane technology. The description and some achievements of the research group will be presented.

Personal Statement

I am Dr. Amer S. El-Kalliny, an associate professor in Water Pollution Research Department at the National Research Center (NRC), Cairo, Egypt. I got my B.S. degree (1999) in Chemistry from Ain Shams University, Cairo, Egypt. Then I started my job as a Researcher Assistant in NRC. In 2005, I was awarded my M.S. degree in Chemistry from the Faculty of Science, Ain Shams University, Egypt, under the title “Removal of refractory compounds from pharmaceutical wastewater”. For the period 2008-2013, I started my Ph.D. program at Delft University of Technology (one of the 60 top universities in the world), the Netherlands first in the Chemical Engineering Department, Faculty of Applied Sciences, under the supervision of Prof. dr. ir. Peter W. Appel and Dr. Henk W. Nugteren, then at the Sanitary Engineering, Faculty of Civil Engineering and Geosciences, with Prof. dr. ir. Luuk C. Rietveld as my promoter. This collaboration led to a unique opportunity to

enrich my experience in both fields. I got my Ph.D. degree under the title “Photocatalytic oxidation in drinking water treatment using hypochlorite and titanium dioxide”. During the Ph.D. program, I supervised 2 M.S., 3 B.S., and 6 visiting M.S. and Ph.D. students. Then, I continued my career as a Researcher for the period from 2014 to early 2019 and currently as an Associate Professor at NRC. Also, I contributed in 10 international and national projects and published 15 papers in international peer-reviewed journals. I also attended and presented at many international conferences. I supervised 1 M.S., and 2 Ph.D. students. My research interests lie in the areas of developing of surface water, ground water, and wastewater treatment technologies; water chemistry; monitoring of water pollutants; advanced oxidation processes (AOPs); photocatalysis; photoelectrocatalytic oxidation; membrane technology; reactor designing of water and wastewater treatment; and environmental risk assessment.