

Photocatalysis A Sustainable and Versatile Technique for Indoor Air Purification

Iliana E. Medina-Ramírez
Universidad Autonoma de Aguascalientes, Mexico

Abstract

Indoor air pollution has become a threat to human health. People spend much time inside different buildings with heavily polluted indoor air. Human and non-human activities release numerous and diverse pollutants into close environments. Biological pollutants are responsible for numerous respiratory diseases with a broad range of severity (allergies, infectious diseases, cancer). The World Health Organization remarks on the increased number of chronic and acute diseases related to indoor air pollution and urges the development of sustainable technologies for indoor air purification. Although adsorption or UV-assisted techniques exist, there are risks and limitations in their use and practical applications. Lately, some research studies show that photocatalysis is a feasible technique to eliminate indoor air pollutants, increasing indoor air quality and human wellness. Our research group is interested in periodic monitoring of indoor air to offer photocatalytic systems with optimal properties for remediation of the site (indoor air) under study. We aim to have an inventory of air pollutants (qualitative and quantitative analysis) by periodically monitoring its quality. After, we can develop a photocatalytic system for the remediation of the site. We have demonstrated the efficiency of different photocatalytic systems ($\text{TiO}_2\text{-Cu}^{2+}$, $\text{Ag@TiO}_2\text{-Cu}^{2+}$, ZnO-Cu^{2+}) for hospitals' indoor air disinfection. Our studies show the high disinfection capacity of the materials and their biocompatibility.