



“Photocatalysis: recent advances on water treatment and antifouling / self-cleaning coatings”

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Summary

The seminar deals with recent advances in the preparation of photocatalysts in the form of powders and thin films and their use in water remediation and functionalization of membranes, fibers and glass to yield antifouling self-cleaning materials, tested in synthetic water and in seawater. The strategies to obtain activity under visible radiation and coatings stability are covered along with details on applications involving functionalization of membranes and treatment of organic pollutants in water. The used catalysts are TiO_2 doped with nitrogen and/or copper, and coupled with graphene, $\text{WO}_3/\text{NiWO}_4$, and Bi_2WO_6 encapsulated in organosilica. Mechanistic studies by using *in situ* DRIFT-MS are presented on the degradation of pollutants of environmental concern such as EDTA. New CFD models on photocatalytic microreactors applied to wastewater treatment will be also discussed topics. The seminar will eventually deal with coupling photocatalysis with other advanced oxidation techniques, such as ozonation, under UV-free visible radiation, exploring the use/application of these processes in tertiary treatment of wastewater



Short Bio

Giovanni Palmisano is an Associate Professor of Chemical Engineering at Khalifa University, where he leads the Photocatalysis Lab and he teaches undergraduate and graduate courses. His research activities are mainly focused on photocatalysis applied to water, environment, materials functionalization, energy, and organic chemistry. In Khalifa University he is theme lead of “Novel materials and nanomaterials for water application” at the Center for Membrane & Advanced Water Technology established three years ago. He has been main advisor of 6 PhD students and 4 MSc students, one of whom won the outstanding thesis award. He has been recipient of 2015 and 2017 ADEK Award for Research Excellence and the 2018 Faculty Research Excellence Award granted by Khalifa University for the category “Associate Professor” of the college of Engineering. His research activities are mainly focused on photocatalysis applied to water, environment, materials functionalization, energy and organic chemistry. He is co-author of ca. 125 highly cited journal papers, 8 patents, 7 books and 9 book chapters. He is an Associate Editor of the Journal of Environmental Chemical Engineering since 2020

