

## Electrochemical characterisation of BiVO<sub>4</sub> for perfluorinated compounds degradation

Tadea Lažeta<sup>1</sup>, Marija Labudović<sup>1</sup>, Marijana Kraljić Roković<sup>1</sup>, Josipa Papac Zjačić<sup>1</sup>, Suresh Kumar Pandey<sup>1</sup>,  
 Andraž Šuligoj<sup>2</sup>, Hrvoje Kušić<sup>1</sup>

<sup>1</sup>University of Zagreb Faculty of Chemical Engineering and Technology, Marulićev trg 19, Zagreb, Croatia

<sup>2</sup>National Institute of Chemistry, Hajdrihova 19, 1001 Ljubljana, Slovenija

[mkralj@fkit.unizg.hr](mailto:mkralj@fkit.unizg.hr)

In the last two decades, perfluorinated organic compounds have attracted significant attention and caused concern due to their impact on the environment and human health. Of particular concern is the fact that these compounds are extremely stable and prone to bioaccumulation. During their production, distribution and disposal, large amounts of perfluorinated alkyl compounds (PFAS) were released into the environment. Their presence has been recorded in the oceans and surface and underground waters, where concentrations ranging from pg/L to µg/L have been determined. There are several ways to remove PFAS from water media such as physical, electrochemical or sonochemical methods and photochemical processes. The most preferred methods are those that break the C-F bond, which degrades PFAS into less toxic compounds. One such method is the photocatalytic process [1].

In this work, the electrochemical characterisation of the photocatalyst BiVO<sub>4</sub> modified with Fe<sub>2</sub>O<sub>3</sub> and Ag was carried out with the aim of their application in the degradation of perfluorooctanoic acid (PFOA). The methods used to characterise the photocatalyst are linear polarization, electrochemical impedance spectroscopy, chronoamperometry and monitoring of the open circuit potential over time. The test was performed in 0.5 mol dm<sup>-3</sup> Na<sub>2</sub>SO<sub>4</sub> solution and Na<sub>2</sub>SO<sub>4</sub>/PFOA solution. In addition, solar photocatalytic degradation of PFOA was conducted by using investigated photocatalytic material while degradation of products was monitored by liquid chromatography-mass spectrometry (LC-MS/MS) method.

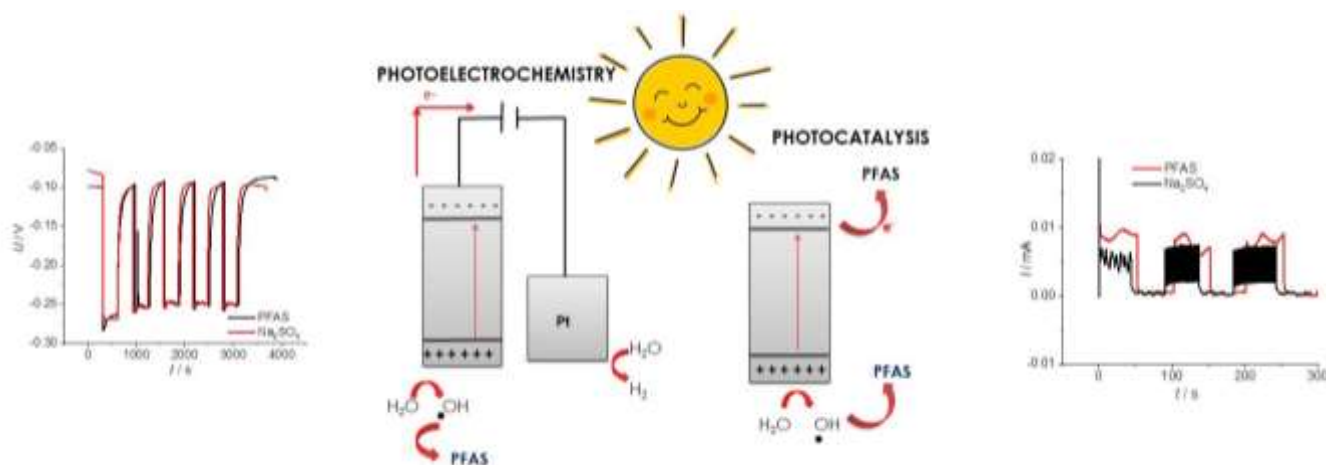


Figure 1. Schematic illustration of the photocatalytic and photoelectrochemical degradation of PFAS

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### References

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