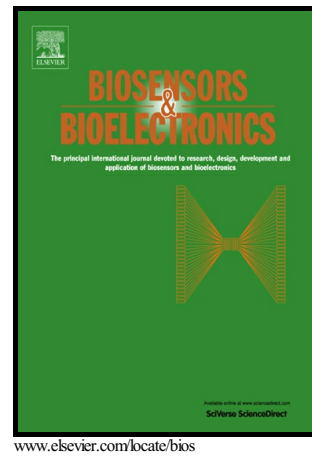


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# Biosensors for wastewater monitoring: a review

Fatemeh Ejeian<sup>1</sup>, Parisa Etedali<sup>1</sup>, Hajar-Alsadat Mansouri-Tehrani<sup>1</sup>, Asieh Soozanipour<sup>1</sup>, Ze-Xian Low<sup>2</sup>, Mohsen Asadnia<sup>3</sup>, Asghar Taheri-Kafrani<sup>1</sup>, and Amir Razmjou<sup>1,4\*</sup>

<sup>1</sup>Department of Biotechnology, Faculty of Advanced Sciences and Technologies, University of Isfahan, Isfahan 73441-81746, Iran

<sup>2</sup>Department of Chemical Engineering, Monash University, VIC 3800, Australia

<sup>3</sup>Department of Engineering, Macquarie University, Sydney, New South Wales 2109, Australia

<sup>4</sup>UNESCO Centre for Membrane Science and Technology, School of Chemical Science and Engineering, University of New South Wales, Sydney, 2052, Australia

## Abstract

Water pollution and habitat degradation are the cause of increasing water scarcity and decline in aquatic biodiversity. While the freshwater availability has been declining through past decades, water demand has continued to increase particularly in areas with arid and semi-arid climate. Monitoring of pollutants in wastewater effluents are critical to identifying water pollution area for treatment. Conventional detection methods are not effective in tracing multiple harmful components in wastewater due to their variability along different times and sources. Currently, the development of biosensing instruments attracted significant attention because of their high sensitivity, selectivity, reliability, simplicity, low-cost and real-time response. This paper provides a general overview on reported biosensors, which have been applied for the recognition of important organic chemicals, heavy metals, and microorganisms in dark waters. The significance and successes of nanotechnology in the field of biomolecular detection are also reviewed. The commercially available biosensors and their main challenges in wastewater monitoring are finally discussed.

## Keywords:

Wastewater monitoring; Organic materials; Heavy metals; Microorganisms; Biosensor

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