

Electrochemical sensor for detecting water pollutants



WATER POLLUTION

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**New electrochemical sensor to detect water pollutants on-site
with no need of pre-processing the sample**

Why is it necessary to control water pollutants?



Water pollution is an increasing global concern that damages human health, aquatic ecosystems, and economic growth. In most countries, intensive agricultural activities have a profound effect on the degradation of inland and coastal waters due to the discharge of large quantities of agrochemicals, organic matter, and drug residues. About 80 % of the World's municipal wastewater is discharged untreated, and industry dumps huge amounts of chemicals such as heavy metals and a variety of organic compounds every year.

Water pollution monitoring is key to take timely and effective actions in order to continuously assessing and guaranteeing water quality

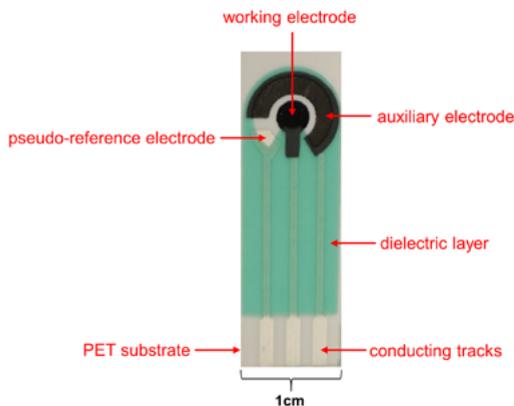
How does our sensor work?

We have developed a new user-friendly electrochemical sensor with a novel versatile screen-printed electrode approach. Sensor performance does not require any sample pre-processing thus facilitating on-site rapid detection of target pollutants.

Detection can be carried out at the point of need using a compact potentiostat plugged into a mobile phone.

How does it compare with other methods?

Current analytical methods require sample collection, stabilization, transport and storage before analysis in a centralized laboratory. Our electrochemical sensor works with a small sample volume cast on the sensor area. The sensor design enables sample filtering together with pH and conductivity adjustment without further user intervention. Thus, non-trained professionals can carry out on site analysis to timely detect target pollutants.



Advantages

- » The electrochemical sensor can be tuned to detect several water pollutants
- » No sample pre-conditioning is needed
- » On site and rapid detection
- » Easy scale-up of electrochemical sensor manufacturing
- » Non-trained professionals can carry out the test

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Reference Article

Composites of porous carbon and copper-based nanoparticles for the electrochemical analysis of chemical oxygen demand

Wenchao Duan, Miquel Torras, Anna Roig, César Fernández-Sánchez, Martí Gich

Materials Today Chemistry, 24, 100899, 2022

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European patent application suitable of international extension

"Screen printed electrode, manufacturing method thereof, electrochemical sensor comprising said electrode for detecting water pollutants, and operating method for said sensor"

Martí Gich, Wenchao Duan and César Fernández

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