

Algae photosystem sensor.

This instrument contains encapsulated marine algae and measures changes in photosystem II fluorescence induced by exposure to toxic compounds.

An integrated Paramecium-Chlorella symbiotic-based biosensor was successfully developed for real-time monitoring of marine water quality and evaluation of biotoxicity. The strain was adapted to grow into microfluidic flow cells with integrated detectors for real-time detection of marine pollutants by fluorescence analysis of photosynthetic photosystem II. A transducer based on fluorescence of PSII was developed. The device is portable, has a small size and low weight, and has multifunction systems capable of integrating the unique detection characteristics of the algal biomediators (high sensitivity, specificity, reproducibility of analysis, rapidity, simple use and low cost) with the necessary mechanical, electronic and microfluidic parts for automatic measurements. The sensor also provides ICT applications to analyse large data sample sets for sea water monitoring and control.

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