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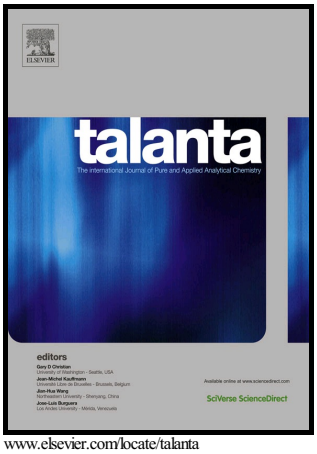

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Gas-diffusion-based passive sampler for ammonia monitoring in marine waters

Lenka O'Connor Šraj[a], M. Inês G. S. Almeida[a], Chelsea Bassett[a], Ian D. McKelvie[a,b], Spas D. Kolev[a*]

[a]School of Chemistry, The University of Melbourne, Victoria 3010, Australia

[b]School of Geography, Earth and Environmental Science, Plymouth University, Plymouth PL4 8AA, United Kingdom

***Corresponding author: Email**: s.kolev@unimelb.edu.au (S.D. Kolev)

Abstract

A novel passive sampler based on gas-diffusion across a hydrophobic membrane is described for the determination of the time-weighted average concentration of dissolved molecular ammonia in high ionic strength aquatic environments, such as sea, coastal and estuarine waters, for a period of 3 days. The passive sampler developed is cheap, easy-to-use, reusable, and has a dynamic concentration range of 2.0 to 12 µM, which covers the water quality guideline trigger value of 11.4 µM (160 µg L^{-1} NH_3-N) for high conservation value waters, making this a powerful new tool for water quality managers involved in long-term ammonia monitoring. The gas-diffusion-based passive sampler was calibrated under laboratory conditions and deployed in a tank of seawater in the laboratory and at an estuarine site for proof of concept, and a good agreement between passive and spot sampling was achieved in both cases.

Graphical abstract