**Optimisation and calibration of a novel passive sampler based on diffusion gradient in thin films for polar organic compounds (o-DGT)**

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Passive samplers are useful tools for sampling of trace pollutants in the environment. Concentrations of polar organic compounds in waters acquired by currently mostly used passive samplers such as POCIS are however semiquantitative, due to a strong dependence of uptake rates on the variable hydrodynamic conditions and/or sorption of analytes to the membrane material separating the sorbent from the aquous phase. Sampling rates acquired by laboratory calibrations may therefore differ from the actual sampling rates in the field. Application of a thin diffusion layer of hydrogel, which behaves as an immobilized water layer on top of the sampling surface, may help to control the analyte uptake rate, eliminating the effect hydronamic conditons. Recently, a promising sampler design has been proposed (Chen et al. 2012), which is based on DGT sampler commonly used for sampling of metals in waters. The sampler consists of agarose hydrogel layer with dispersed sorbent and a diffusion layer of pure agarose hydrogel. For accurate calibration, diffusion coefficients of each compound in the hydrogel are required. Results of diffusion coefficient measurement from the migration of the ecompounds in a stackof several hydrogel layers will be presented along with results of laboratory calibration experiments with different water flow rates in an artificial flow-through system and different hydrogel thicknesses for different groups of emerging pollutants including perfluorinated compounds, currently used pesticides, pharmaceuticals and personal care products.

References :

Chen C.-E., Zhang H., and Jones K. C., A novel passive water sampler for in situ sampling of antibiotics.,   
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