

Danish Offshore Technology Centre Technology Conference 2024

Determination of BTEX in water by 3D-fluorescence spectroscopy and chemometrics

SUBTITLE

Isabelle M. A. Viegas^{1*}, Åsmund Rinnar², Simon I. Andersen¹

¹ Technical University of Denmark, Danish Offshore Technology Centre, Elektrovej 375, 2800, Kgs. Lyngby, Denmark.

² University of Copenhagen, Department of Food Science, Rolighedsvej 26, 1958, Frederiksberg C, Denmark.

*e-mail: iviegas@dtu.dk

BTEX – benzene, toluene, ethylbenzene, and xylenes – are some of the lightest and most toxic contaminants from crude oil, which very often end up in the water bodies due to accidental spills or natural discharge throughout the production and distribution chain of mineral-derived fuels. In addition to being highly soluble in water, which makes it difficult to remove by mechanical processes, BTEX contaminants are very volatile with high PNEC values and yet not regulated in produced water. This project aims to provide a simple, fast, and reliable analytical methodology to determine BTEX in water using 3D-fluorescence spectroscopy and multi-way analysis. In this presentation, we will share the results of the methodology developed and applied to water samples. In the future, this methodology is intended to be integrated with the ARROiW prototype as a special module for BTEX in water samples, including but not restricted to produced water.