

ABSTRACT SYMPOSIUM NAME: Innovative Materials & Technologies for Sustainable Water Purification-Oral

ABSTRACT SYMPOSIUM PROGRAM AREA NAME: ENVR

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PRESENTATION TYPE: Oral Only : Do not consider for Sci-Mix

TITLE: Removal of priority hazardous pollutants in municipal sewage effluent to meet environmental quality standards of the European Water Framework Directive using TAML Activators

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ABSTRACT BODY:

Abstract: The European Water Framework Directive (WFD) commits EU member states to achieve good qualitative and quantitative status of water bodies. The directive is designed to help protect and improve the ecological health of groundwater, rivers, lakes, estuaries and coastal waters. Under the WFD, chemicals posing the greatest risk of harm to the aquatic environment are classed as priority substances (or priority hazardous substances); environmental quality standards (EQS) are used to assess risks to the ecological quality of the water environment and to identify the improvements needed to bring these waters into a good condition.

The current status in terms of EQS compliance with respect to these chemicals shows that only half of European waters will meet the required standards, making major improvements in wastewater treatment necessary. Advanced wastewater treatment processes (GAC and ozone) capable of removing problematic water pollutants across Europe are estimated to incur additional costs at hundreds of billions of Euros. These enormous costs, together with the large energy requirements present substantial barriers to implementation, with only Switzerland planning on making such investment in the near future. In the absence of a sustainable low cost solution to water pollution to meet these standards it is likely that improvements in water quality will not be economically viable for many European countries. The TAML process provides a significant cost and energy advantage to water operators and a viable and sustainable eco-innovative, Green Chemistry-driven tertiary wastewater treatment option that can overcome these barriers. TAML activators have been shown to be highly effective in meeting the EQS for some of the most persistent substances in real world samples and these studies are presented in this paper.

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