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Abstract.

Using of Fluorescence Spectroscopy to Characterize Organic Matter in the Effluent from a Nitrifying Reactor.

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Abstract: Fluorescence spectroscopy is an analytical tool used to examine water samples of different origin because it is sensitive, selective and can give a wide range of information on the composition, characteristics, origin and distribution of dissolved organic matter (DOM). Soluble microbial products (SMP) are organic compounds produced during growth and decay of microorganisms in biological treatment systems. SMP are important because they are formed during the biological treatment of waste water and comprise a significant portion of the DOM of the effluent of these treatment systems. The main objective of this study was to characterize the effluent of a MOD nitrifying autotrophic aerobic reactor using 3-D EEM to determine if the 3-D EEM could identify SMP produced by nitrifying bacterium. The 3-D EEM nitrifying reactor effluent showed only two fluorescence peaks (Peaks C and D) allocated to humic substances. The presence of peaks C and D in the effluent from the nitrifying reactor located at longer wave lengths and higher fluorescence intensity with respect to those observed in the influent could be attributed to the production and accumulations of SMP autotrophic nitrifying aerobic bacterium due that predominated in the reactor and are the only possible source of fluorescent DOM.

Keywords: Nitrification, Dissolved organic matter (DOM), Fluorescence spectroscopy three-dimensional excitation emission matrix (EMM), Soluble microbial products

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