



Treatment of industrial wastewater with high content of polyethylene glycols by Fenton-like reaction system ($\text{Fe}^0/\text{H}_2\text{O}_2/\text{H}_2\text{SO}_4$)

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ABSTRACT

The Fenton-like reaction (FLR) as advanced oxidation process system was successfully applied in the industrial wastewater pre-treatment with high content of polyethylene glycols (PEGs). Our effort was focused on the monitoring of efficiency of chemical oxygen demand (COD) removal in untreated and pre-treated wastewater using FLR ($\text{Fe}^0/\text{H}_2\text{O}_2/\text{H}_2\text{SO}_4$) and also identification of products after treatment process. The influence of FLR pre-treatment on the biological treatment step was also studied. It was found that the COD value removal in untreated wastewater was only 37%, whereas in pre-treated wastewater the COD removal achieved 84%. High-performance liquid chromatography data have shown that during FLR the low-molecular fragments of PEGs are formed. It was also observed that high initial COD value was considerably decreased.

Keywords: Fenton-like reaction; Industrial wastewater; Polyethylene glycols; Degradation

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