Application of Cu-Al nanoporous pillared clays for the wet oxidation of dyehouse effluent

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The dyehouse effluents from the textile industry impose serious environmental problems because of their color and their high chemical oxygen demand(COD). The discharge of highly colored waste is not only aesthetically displeasing, but it also interferes with the transmission of light and upsets the biological processes which may then cause the direct destruction of aquatic communities present in the receiving stream.

The efficient removal of pollutants through catalytic wet oxidation requires very high temperature and pressure. The severe reaction conditions can lead to high installation costs, and practical applications of this process are limited. Therefore, new catalyst system needs to be developed in order to achieve high oxidation efficiency at considerable lower temperature and pressure.

In the present work Cu-Al nanoporous pillared clays were used for the catalytic oxidation of reactive dye aqueous solution. Besides O_2 as an oxidant small of $H_2O_2$was also introduced into the reactor, and the catalytic performance for the wet oxidation of reactive dyes was investigated.