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## **IRON CONTAINING PILLARED BENTONITES AS HETEROGENEOUS FENTON-TYPE CATALYSTS FOR THE OXIDATION OF PHENOL IN WASTEWATERS**

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### **Abstract**

This study presents an evaluation of the catalytic performances of some iron containing clay-based catalysts for the catalytic wet hydrogen peroxide oxidation of phenolic aqueous wastes. The raw material for the catalyst, a Romanian bentonite, was used to prepare Al and mixed (Al-Fe) pillared clays using the powder method. Furthermore, the raw clay and the Al pillared clay were ion exchanged in order to obtain active Fenton-type catalysts. Selected catalysts were characterized by DRX, BET and chemical analysis techniques. All the tests were performed on a laboratory scale set-up. Although, the iron exchanged raw clay exhibits the higher activity in phenol removal, this catalyst is not stable against leaching. Both pillared clays are highly active in phenol removal, allowing total elimination of phenol, but the pillared clay with mixed (Al-Fe) pillars is more stable against iron leaching than the iron exchanged catalysts. However, at an initial pH of 5.0 this catalyst loses most of its activity.

*Keywords:* catalytic wet peroxide oxidation, phenolic wastewater, clay, PILCs, Fenton-type oxidation

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