

## Environment and water

### Fenton-type heterogeneous catalysts based in zeolites for water treatment

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Water pollution is one of the most important environmental problems in the world. Large amounts of synthetic organic contaminants are released daily into different types of wastewaters and ultimately enter into natural water bodies. It is well known the vast majority of these compounds are persistent organic pollutants, owing to their high stability to sunlight irradiation and resistance to microbial attack. Advanced oxidation processes (AOPs) have been demonstrated to achieve good results for the elimination of organic pollutants from wastewater with very short treatment times. Fenton-type heterogeneous processes have received much attention for their low cost, high efficiency, and moderate conditions among these AOPs.<sup>1</sup> In heterogeneous Fenton-type catalysis, iron (or other transition metals) is stabilized on/in the catalyst's structure and thus can reduce hydroxide precipitation over a wider pH range.<sup>2</sup> This work report the preparation of bimetallic heterogeneous catalysts based in NaY zeolite with Fe, Cu and Mn by ion-exchange method using different routes (Figure 1). Different characterization techniques show that the metals are cationic and show higher oxidation efficiency against the azo dyes, tartrazine and procion yellow, and the order of metal ion exchanging are important to improve their catalytic activity. The prepared bimetallic catalysts can be used at least three times without a significant loss of catalytic activity, proving to have a very high stability.

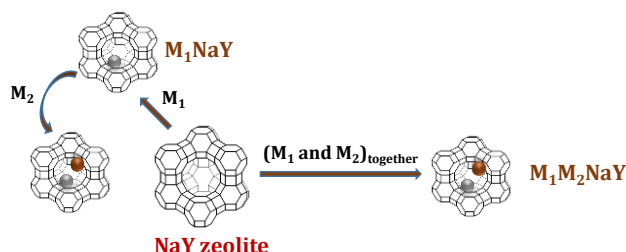


Figure 1: Different routes for preparing the heterogeneous Fenton-type catalysts by ion exchange

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#### References:

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