

## Removal of the Ammonia Nitrogen by Fe<sub>2</sub>O<sub>3</sub> Coated Zeolite

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### Extended Abstract

Ammonia is well known as a substance that causes the eutrophication with a phosphorus in the water because it is contained in the industrial wastewater, agricultural wastewater, and the agricultural wastewater. Therefore, the various methods of removing ammonia have been studied, and the methods using biological activity or ion exchange have been mainly performed [1,2]. Recently, the adsorption removal method using a natural zeolite having low cost and rich in the amount of resources has attracted attention. The natural zeolite used as a soil remediation and a deodorant for an adsorbent of cation because of its large specific surface area and negative charge in the structure. And it is also used as a purification material for water quality in rivers and lakes [3,4].

In this study, to use as a method to stably obtain drinking water when the final treated water of sewage and wastewater flows into the river, the natural zeolite was coated by Fe<sub>2</sub>O<sub>3</sub>. And the test of the ammonia nitrogen removal was carried out using the Fe<sub>2</sub>O<sub>3</sub> coated zeolite. The total adsorption capacity of NH<sub>4</sub><sup>+</sup> was 1.32 mg/g, and the removal rate of NH<sub>4</sub><sup>+</sup> was 55.5%. The test of Mn, and As removal was also carried out. The total adsorption capacities of Mn and As were 0.13 mg/g and 0.17 mg/g, respectively. From the results, it seems that the Fe<sub>2</sub>O<sub>3</sub> coated zeolite was suitable for the materials to remove the NH<sub>4</sub>-N, Mn and As in the sewage or wastewater at the same time.

### References

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