

TO CATEGORIES 

**1.400.000** PAGES OF RESEARCH

MONTHLY  
**1.200.000**  
PAGE VIEWS

OVER  
**300.000**  
VISITORS PER MONTH

**new** E-BOOKS 

FULLTEXT SEARCH

[GO!](#)

NEW: [Advanced Search](#)

## Periodicals:

### MSF

> Materials Science Forum

### KEM

> Key Engineering Materials

### SSP

> Solid State Phenomena

### DDF

> Defect and Diffusion Forum

### AMM

> Applied Mechanics and Materials

### AMR

> Advanced Materials Research

### AST

> Advances in Science and Technology

### Study on the Adsorption of Livestock Wastewater by Bentonite Coated Chitosan

**Journal** [Advanced Materials Research](#) (Volumes 356 - 360)

**Volume** [Progress in Environmental Science and Engineering](#)

**Edited by** Hexing Li, Qunjie Xu and Daquan Zhang

**Pages** 368-372

**DOI** 10.4028/www.scientific.net/AMR.356-360.368


**Citation** Hong Shao et al., 2011, Advanced Materials Research, 356-360, 368

**Online since** October, 2011

**Authors** [Hong Shao](#), [Di Zhang](#)

**Keywords** [Adsorption](#), [Bentonite Coated Chitosan](#), [Livestock Wastewater](#)

**Abstract** The bentonite coated chitosan which was prepared of natural bentonite used as raw material and chitosan used as modifying agent applied in the treatment of livestock wastewater. The optimal preparation conditions were obtained and the removal rate of the ammonia nitrogen and COD were 73.09% and 88.94% respectively which raw concentration were 27520mg/L and 2060mg/L by orthogonal experiment. Langmuir isothermal adsorption model and the pseudo-second-order kinetic equation could describe the adsorption process accurately.

**Full Paper**  [Get the full paper by clicking here](#)

### First page example

## Study on the adsorption of livestock wastewater by bentonite coated chitosan

SHAO Hong<sup>1, a</sup>, ZHANG Di<sup>2, b</sup>

<sup>1,2</sup>College of Environmental and Biological Engineering Shenyang University of Chemical  
and Technology, SYUCT Shenyang, China

<sup>a</sup> hj8983@163.com, <sup>b</sup> zhangdino1@126.com

**Key words:** Bentonite coated chitosan, livestock wastewater, adsorption.

**Abstract:** The bentonite coated chitosan which was prepared of natural bentonite used as raw material and chitosan used as modifying agent applied in the treatment of livestock wastewater. The optimal preparation conditions were obtained and the removal rate of the ammonia nitrogen and COD were 73.09% and 88.94% respectively which raw concentration were 27520mg/L and 2060mg/L by orthogonal experiment. Langmuir isothermal adsorption model and the pseudo-second-order kinetic equation could describe the adsorption process accurately.

### Introduction

In recent years, livestock farm was developed to scale with the increasing demand of the livestock products. However the discharge of livestock wastewater is also increased. This type of the wastewater has the characteristics such as high concentration of the COD, the ammonia nitrogen and the SS [1]. The ammonia nitrogen is added as one of the water pollutants during the twelfth five years plan. How to solve the livestock wastewater effectively is one of the most urgent problems to be settled.

The common methods of the livestock wastewater treatment were biomembrane [2], biological filter bed [3], unslaked lime [4] and so on. However, these methods have the problems such as difficult control, complex operation, secondary pollution. This experiment prepared the bentonite coated chitosan as adsorbents to treat the livestock wastewater had the advantages such as simple process, low requires of reaction conditions, no secondary pollution.

### Experimental

**Apparatus and reagents.** The natural bentonite was used as raw material; the chitosan was used as modifying agent; the ethylic acid was used as dissolvent; concentrated sulfuric acid, normal silver sulfate and potassium dichromate were prepared to measure the COD, potassium dichromate, potassium iodide, mercuric iodide, sodium potassium tartrate and ammonium chloride were prepared to measure the ammonia nitrogen.

The wastewater was mixed by JJ-4 six league electric blender, the bentonitecoated chitosan was made by microwave oven, the COD was measured by the determinator HACH company made, the ammonia nitrogen was measured by 721-spectrophotometer.

**The preparation of bentonite coated chitosan.** [5]The chitosan which deacelation degree was 90% was dissolved with 5% (v/v) acetic acid solution in the 100mL beaker. 50g of the bentonite coated chitosan was stirred with 50-60mL of the chitosan solution and putted in the microwave oven, heated, porphyzied, selected through 0.18mm.



> @scientific.net

### CONFERENCE



11/13/2012 - 11/15/2012

The International Conference on Advanced Eng

8/24/2012 - 8/25/2012

AMMT 2012: 2012 International Conference on

8/24/2012 - 8/26/2012

2012 2nd International Conference on Material :

more...