

Accepted Manuscript

Title: Selective catalytic reduction of NO_x with NH₃ over Titanium modified Fe_xMg_yO_z catalysts: Performance and Characterization

Author: Liting Xu Shengli Niu Dong Wang Chunmei Lu Qi
Zhang Kang Zhang Jing Li



PII: S1226-086X(18)30109-6
DOI: <https://doi.org/doi:10.1016/j.jiec.2018.02.039>
Reference: JIEC 3899

To appear in:

Received date: 10-12-2017
Revised date: 11-2-2018
Accepted date: 23-2-2018

Please cite this article as: L. Xu, S. Niu, D. Wang, C. Lu, Q. Zhang, K. Zhang, J. Li, Selective catalytic reduction of NO_x with NH₃ over Titanium modified Fe_xMg_yO_z catalysts: Performance and Characterization, *Journal of Industrial and Engineering Chemistry* (2018), <https://doi.org/10.1016/j.jiec.2018.02.039>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

1 **Selective catalytic reduction of NO_x with NH₃ over Titanium**
2 **modified Fe_xMg_yO_z catalysts: Performance and Characterization**

3 Liting Xu^a, Shengli Niu^a, Dong Wang^b, Chunmei Lu^{a*}, Qi Zhang^a, Kang Zhang^a, Jing Li^c

4 ^a*School of Energy and Power Engineering, Shandong University, 250061 Jinan, China*

5 ^b*State Key Joint Laboratory of Environment Simulation and Pollution Control, Tsinghua*

6 *University, Beijing 100084, China*

7 ^c*School of Chemistry and Chemical Engineering, Shandong University, 250100 Jinan, China*

8 **Corresponding author(cml@sdu.edu.cn)*

9 **Abstract:** A series of titanium modified Fe_xMg_yO_z catalysts were prepared by coprecipitation
10 method and impregnation-coprecipitation method with microwave assistant and their catalytic
11 capability in selective catalytic reduction (SCR) was evaluated. Appropriate amount of either
12 titanium or TiO₂ could both improve the catalytic performance of Fe_xMg_yO_z catalyst, especially
13 above 350 °C. 7.5%Ti-Fe_xMg_yO_z catalyst with wide temperature range of 225 to 400 °C could
14 achieve the maximum NO_x conversion of 100%, while Fe_xMg_yO_z/TiO₂(b) catalyst exhibited the
15 best catalytic performance in the present of H₂O and SO₂. Characterization results exhibited that
16 γ-Fe₂O₃ was the main active phase, TiO₂ was mainly in the form of anatase TiO₂ and both titanium
17 and magnesium existed in amorphous phase. The crystalline grain could be refined with the
18 addition of either titanium or TiO₂, as well as the increase of BET surface area and pore volume.
19 The acid sites, redox ability and the chemisorbed oxygen were the most important factors in SCR
20 reaction. The introduction of titanium and TiO₂ had the effect of increasing the strength of the acid

Download English Version:

<https://daneshyari.com/en/article/6666550>

Download Persian Version:

<https://daneshyari.com/article/6666550>

[Daneshyari.com](https://daneshyari.com)