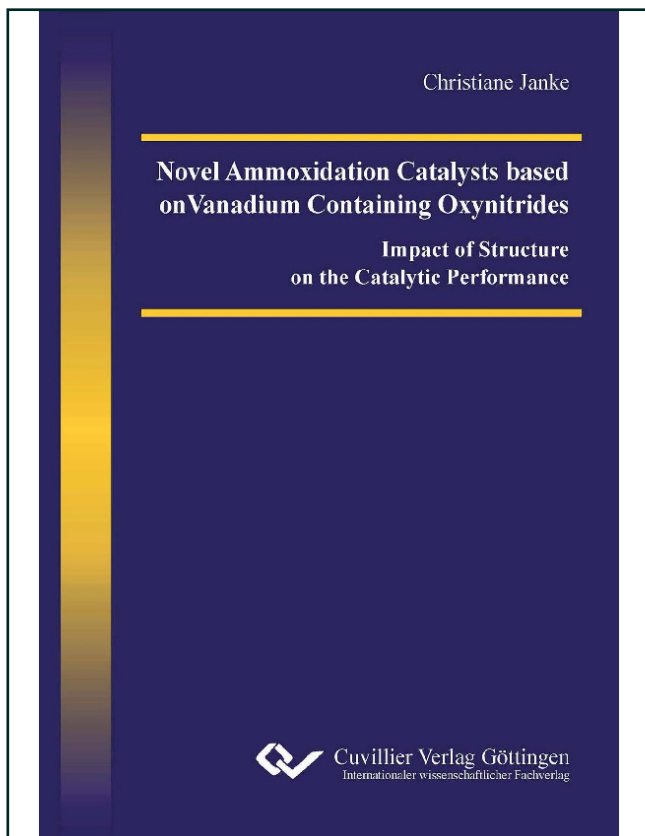




Christiane Janke (Autor)

**Novel Ammoxidation Catalysts based on Vanadium
Containing Oxynitrides**

Impact of Structure on the Catalytic Performance



<https://cuvillier.de/de/shop/publications/90>

Copyright:

Cuvillier Verlag, Inhaberin Annette Jentsch-Cuvillier, Nonnenstieg 8, 37075 Göttingen,
Germany

Telefon: +49 (0)551 54724-0, E-Mail: info@cuvillier.de, Website: <https://cuvillier.de>



Contents

1. Introduction and Objectives	1
2. State of the Art	3
3. Results	9
3.1. Combining VAION and VZrON to VZrAlON catalysts	9
3.1.1. Catalytic performance	9
3.1.2. Comparison of structural properties of VZrAlON with those of VAION and VZrON catalysts	13
3.1.3. In situ experiments using EPR spectroscopy	21
3.1.4. Conclusions on VZrAlON catalysts in relation to VZrON and VAION .	32
3.2. VZrPON catalysts	34
3.2.1. Catalytic performance	34
3.2.2. Structural characterization of VZrPON by ex situ analysis in comparison to VZrPO and VZrON	36
3.2.3. In situ experiments	45
3.2.4. Structure-reactivity relationships in VZrPON catalysts	48
3.3. VMON/Mo _x O _y N _z catalysts (M = Zr or Al)	51
3.3.1. Catalytic performance	51
3.3.2. Structural comparison of VMON/Mo _x O _y N _z samples with the corre- sponding VMON catalysts (M = Al or Zr)	52
3.3.3. Conclusions on VMON/Mo _x O _y N _z catalysts	57
3.4. VMoON catalysts	58
3.4.1. Catalytic performance	58
3.4.2. Ex situ characterization of VMoO and VMoON catalysts	59
3.4.3. In situ experiments	74
3.4.4. Conclusions on VMoON catalysts	81



3.5. VSbON oxynitrides	84
3.5.1. Catalytic performance	84
3.5.2. Structural characterization of VSbON catalysts	86
3.5.3. Conclusions to VSbON catalysts	97
4. General Conclusions	99
4.1. Catalytic performance of oxynitrides	99
4.2. Structure-reactivity relationships	100
5. Experimental part	103
5.1. Catalyst syntheses	103
5.2. Catalytic tests	106
5.3. Characterization methods	108
A. Supporting Figures	i
B. Supporting Tables	xiii
Bibliography	xiii