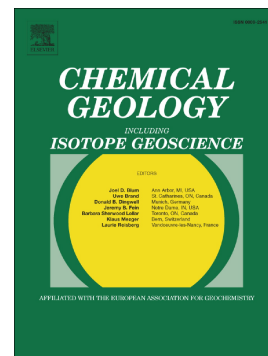


Accepted Manuscript

A cryogenic XPS study of Ce fixation on nanosized manganite and vernadite: Interfacial reactions and effects of fulvic acid complexation

Changxun Yu, Jean-François Boily, Andrey Shchukarev, Henrik Drake, Zhaoliang Song, K. Johan Hogmalm, Mats E. Åström



PII: S0009-2541(18)30104-9
DOI: doi:[10.1016/j.chemgeo.2018.02.033](https://doi.org/10.1016/j.chemgeo.2018.02.033)
Reference: CHEMGE 18672

To appear in: *Chemical Geology*

Received date: 17 December 2017
Revised date: 18 February 2018
Accepted date: 21 February 2018

Please cite this article as: Changxun Yu, Jean-François Boily, Andrey Shchukarev, Henrik Drake, Zhaoliang Song, K. Johan Hogmalm, Mats E. Åström, A cryogenic XPS study of Ce fixation on nanosized manganite and vernadite: Interfacial reactions and effects of fulvic acid complexation. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Chemge(2017), doi:[10.1016/j.chemgeo.2018.02.033](https://doi.org/10.1016/j.chemgeo.2018.02.033)

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.

A cryogenic XPS study of Ce fixation on nanosized manganite and vernadite: interfacial reactions and effects of fulvic acid complexation

Changxun Yu^{*a}, Jean-François Boily^b, Andrey Shchukarev^b, Henrik Drake^a, Zhaoliang Song^c, K. Johan Hogmalm^d, Mats E. Åström^a

^aDepartment of Biology and Environmental Science, Linnaeus University, SE-39182 Kalmar, Sweden

^bDepartment of Chemistry, Umeå University, Umeå, SE-901 87, Sweden

^cInstitute of the Surface-Earth System Science Research, Tianjin University, Tianjin 300072, China

^dDepartment of Earth Sciences, University of Gothenburg, SE-405 30 Gothenburg, Sweden

*Corresponding author:

email: changxun.yu@lnu.se; yuchangxun2006@163.com

Cellphone: +0046 0737539543

ABSTRACT

This study investigated interfacial reactions between aqueous Ce(III) and two synthetic nanosized Mn (hydr-)oxides (manganite: γ -MnOOH, and vernadite: δ -MnO₂) in the absence and presence of Nordic Lake fulvic acid (NLFA) at circumneutral pH by batch experiments and cryogenic X-ray photoelectron spectroscopy (XPS). The surfaces of manganite and vernadite were negatively charged (XPS-derived loadings of (Na+K)/Cl > 1) and loaded with 0.42-4.33 Ce ions nm⁻². Manganite stabilized Ce-oxidation states almost identical to those for vernadite (approximately 75% Ce(IV) and 25% Ce(III)), providing the first experimental evidence that also a Mn(III) phase (manganite) can act as an important scavenger for Ce(IV) and thus, contribute to the decoupling of Ce from its neighboring rare earth elements and the development of Ce anomaly. In contrast, when exposed to Ce(III)-NLFA complexes, the

Download English Version:

<https://daneshyari.com/en/article/8910290>

Download Persian Version:

<https://daneshyari.com/article/8910290>

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