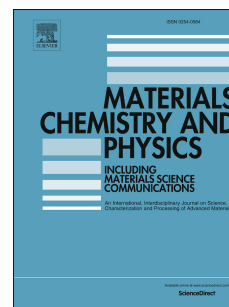


Accepted Manuscript

The distinct effects of isomorphous substitution of various divalence trace metals on hematite structure

Wei Li, Qian Wang, Xionghan Feng, Wenfeng Tan, Lirong Zheng, Hui Yin, Fan Liu



PII: S0254-0584(18)30516-9

DOI: [10.1016/j.matchemphys.2018.06.017](https://doi.org/10.1016/j.matchemphys.2018.06.017)

Reference: MAC 20717

To appear in: *Materials Chemistry and Physics*

Received Date: 31 August 2017

Revised Date: 2 June 2018

Accepted Date: 9 June 2018

Please cite this article as: W. Li, Q. Wang, X. Feng, W. Tan, L. Zheng, H. Yin, F. Liu, The distinct effects of isomorphous substitution of various divalence trace metals on hematite structure, *Materials Chemistry and Physics* (2018), doi: 10.1016/j.matchemphys.2018.06.017.

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.

The distinct effects of isomorphous substitution of various divalence trace metals on hematite structure

Wei Li^a, Qian Wang^a, Xionghan Feng^a, Wenfeng Tan^a, Lirong Zheng^b,

Hui Yin^a, Fan Liu^a

^a Key Laboratory of Arable Land Conservation (Middle and Lower Reaches of Yangtse River) Ministry of Agriculture, College of Resources and Environment, Huazhong Agricultural University, Wuhan 430070, PR China

^b Beijing Synchrotron Radiation Facility, Institute of High Energy Physics, Chinese Academy of Sciences, Beijing 100049, China

Abstract:

To provide a better knowledge of the mechanisms by which trace metals associate with and affect the structure of hematite, series of Mn-, Cu-, Ni-substituted hematite samples were synthesized and characterized by Powder X-ray diffraction (XRD) and extended X-ray absorption fine structure (EXAFS). The results show that the incorporation of Mn, Ni, Cu into the structure of hematite changes the cell parameters of hematite due to the different radii between these trace metals and Fe³⁺. The isomorphous substitution of trace metal ions with different radius from Fe³⁺, either larger or smaller than Fe³⁺, will both cause increase in the ratio of the face-sharing Fe-Fe coordination distance to edge-sharing Fe-Fe distance, but through the distinct underlying mechanisms.

Download English Version:

<https://daneshyari.com/en/article/7921180>

Download Persian Version:

<https://daneshyari.com/article/7921180>

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