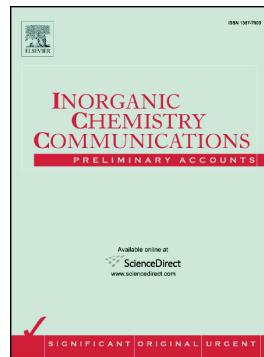


Accepted Manuscript

Brookite and anatase nanomaterial polymorphs of TiO₂ synthesized from TiCl₃

J.H. Leal, Y. Cantu, D.F. Gonzalez, J.G. Parsons



PII: S1387-7003(17)30051-5

DOI: doi: [10.1016/j.inoche.2017.07.014](https://doi.org/10.1016/j.inoche.2017.07.014)

Reference: INOCHE 6711

To appear in: *Inorganic Chemistry Communications*

Received date: 18 January 2017

Revised date: 2 May 2017

Accepted date: 13 July 2017

Please cite this article as: J.H. Leal, Y. Cantu, D.F. Gonzalez, J.G. Parsons , Brookite and anatase nanomaterial polymorphs of TiO₂ synthesized from TiCl₃, *Inorganic Chemistry Communications* (2017), doi: [10.1016/j.inoche.2017.07.014](https://doi.org/10.1016/j.inoche.2017.07.014)

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.

Brookite and Anatase nanomaterial polymorphs of TiO_2 synthesized from TiCl_3 .
J.H. Leal[†], Y. Cantu[†], D.F. Gonzalez, and J.G. Parsons^{‡*}

Department of Chemistry The University of Texas-Rio Grande Valley 1201 W University Dr.
Edinburg TX 78539

KEYWORDS: brookite, anatase, XRD, Synthesis, Aqueous solution

ABSTRACT: Synthesis of anatase and brookite was achieved under mild conditions in aqueous solution. In addition, mixtures of brookite and rutile as well as mixtures of the anatase and rutile polymorphs were observed at different temperatures. It was observed that temperatures above 80°C produced anatase and brookite phases, exclusively. The samples prepared using the acetate synthesis showed on average bandgap around 2.95-3.0 eV and brookite was observed. Whereas the samples prepared using the sulfate synthesis showed a bandgap from 3.1 to 3.2 eV and anatase was observed. In addition, the average grain size of the brookite and anatase phase synthesized at 100 °C were 9.7 and 12 nm, respectively, as determined from XRD

Download English Version:

<https://daneshyari.com/en/article/5151067>

Download Persian Version:

<https://daneshyari.com/article/5151067>

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