

Valparaiso University ValpoScholar

Symposium on Undergraduate Research and
Creative Expression (SOURCE)

Office of Sponsored and Undergraduate Research

Summer 2013

Untitled

Evan Beyers
Valparaiso University

Jonathan Ogland-Hand
Valparaiso University

Follow this and additional works at: <https://scholar.valpo.edu/cus>

 Part of the [Mechanical Engineering Commons](#)

Recommended Citation

Beyers, Evan and Ogland-Hand, Jonathan, "Untitled" (2013). *Symposium on Undergraduate Research and Creative Expression (SOURCE)*. 286.
<https://scholar.valpo.edu/cus/286>

This Poster Presentation is brought to you for free and open access by the Office of Sponsored and Undergraduate Research at ValpoScholar. It has been accepted for inclusion in Symposium on Undergraduate Research and Creative Expression (SOURCE) by an authorized administrator of ValpoScholar. For more information, please contact a ValpoScholar staff member at scholar@valpo.edu.

Authors: **Evan Beyers and Jonathan Ogland-Hand**

Department: Mechanical Engineering

Faculty Sponsors: Dr. Robert Palumbo, Mechanical Engineering and Dr. Jon Schoer, Chemistry

Title:

Abstract:

The solar furnace research project at Valparaiso University utilizes a decoupled solar thermal electrolysis process for the production of H₂ from water. We are focusing on an iron oxide system, which involves the conversion of magnetite to hematite in a cyclical process. Our experimental study for the iron oxide system confirmed that the electrolytic oxidation and thermal reduction steps of the metal oxide occur in a laboratory scale environment. Unfortunately, some of the Fe⁺³ products for the magnetite system stays in solution when the electrolysis is done in a strong acid. We needed to develop methods to quantify the fraction of iron remaining in solution in order to maximize solid phase recovery. Our analyses provide data consistent with the expected Fe⁺²: Fe⁺³ ratio. We will continue with improving solid phase hematite recovery.