

Haitao Wang

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Education

Ph. D. in Metallurgical Engineering

The University of Utah, Salt Lake City, UT

Aug. 2006 ~ Aug.2011

M. S. in Ferrous Metallurgy Engineering

Central South University, China

Sept. 2002 ~ June 2005

B. S. in Minerals Processing Engineering

Central South University, China

Sept. 1998 ~ June 2002

Research Experiences

Graduate Research Assistant, University of Utah,

Aug. 2006 ~ Aug.2011

Flash Hydrogen Reduction of Magnetite Concentrate (Roadmap Technology Project)

- Worked on the development of a novel flash ironmaking process aimed at lowering production cost, energy consumption, and CO₂ emission.
- Kinetics feasibility measurement of flash hydrogen reduction of magnetite concentrate particles
- Measured systematically the reduction kinetics of magnetite concentrate particles.
- Analyzed the reduction behavior of magnetite concentrate particles in the flash ironmaking process.
- Developed a rate expression to describe the effect of variables on reduction rate including reduction temperature, partial pressures of hydrogen and water vapor, and particle size.
- Modification of large-scale reactor---Utah Flash Reactor
- Experimental test of large-scale reactor system.

U. S. (NSF)-Egypt Joint Program: Metallic Iron Whiskers Growth during the Reduction of Iron Oxide

- Determined the effect of firing and reduction conditions on swelling and iron whisker formation.
- Determined the effect of CaO/SiO₂/MgO/Al₂O₃ on swelling and iron whisker formation.
- A conceptual diagram was firstly formulated to adequately represent the effects of CaO/SiO₂/MgO/Al₂O₃, firing and reduction conditions on swelling and iron whisker formation and growth.

Graduate Research Assistant, Central South University, China,

Sept. 2002 ~ June 2005

Evaluation of Sintering Characteristics of Typical Imported Iron Ores

- Optimization investigation aimed at lowering cost and energy consumption in sintering of iron ores.
- Set up a novel way to examine the ability of the typical imported iron ore in the reaction with lime to form Calcium Ferrite.

A Novel Composite Agglomeration Process (CAP) for Preparing Blast Furnace Burden.

- Develop an innovative process of preparing ironmaking burden.
- *This process has successfully been put into production in China.*

Internship

➤ R&D Department, Xiangtan Iron and Steel Company, Hunan, China

09/2003 ~ 12/2003

➤ Wuhan Iron and Steel Company, Hubei, China

07/2001 ~ 09/2001

➤ Lianyuan Iron and Steel Company, Hunan, China

07/2000 ~ 08/2000

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Publications

1. **Haitao Wang** and H. Y. Sohn: “*Effect of Reducing Gas on Reduction Kinetics of Magnetite Concentrate Particles Relevant to a Novel Flash Ironmaking Process*”, in preparation.
2. **Haitao Wang** and H. Y. Sohn: “*Effect of Al_2O_3 and MgO on Swelling and Iron Whisker Formation during the Reduction of Iron Oxide Compact*”, in preparation, will submit to *Ironmaking and Steelmaking*.
3. **Haitao Wang** and H. Y. Sohn: “*Effect of Reducing Gas on Swelling and Iron Whisker Formation during the Reduction of Iron Oxide Compact*”, in preparation, will submit to *ISIJ*.
4. **Haitao Wang** and H. Y. Sohn: “*Hydrogen Reduction Kinetics of Magnetite Concentrate Particles Relevant to a Novel Flash Ironmaking Technology*”, submitted to *Metal. Trans. B*.
5. **Haitao Wang**, M. E. Choi and H. Y. Sohn: “*Intrinsic Hydrogen Reduction Kinetics of Magnetite Concentrate Particles Relevant to a Novel Green Ironmaking Technology*”, 2nd International Symposium on High-Temperature Metallurgical Processing, TMS, Feb. 27~ Mar. 3, 2011, San Diego, CA.
6. **H. T. Wang** and H. Y. Sohn: “*Effect of CaO and SiO_2 on Swelling and Iron Whisker Formation during the Reduction of Iron Oxide Compact*”, *Ironmaking and Steelmaking*, 38(6), 2011, pp. 447-52.
7. **Haitao Wang** and H. Y. Sohn: “*Effect of Firing and Reduction Conditions on Swelling and Iron Whisker Formation during the Reduction of Iron Oxide Compact*”, *ISIJ International*, 51(6), 2011, pp.906-12.
8. T. Jiang, G. H. Li, **H. T. Wang**, K. C. Zhang and Y. B. Zhang: “*Composite Agglomeration Process (CAP) for Preparing Blast Furnace Burden*”, *Ironmaking & Steelmaking*, 37(1), 2010, 1-7.
9. **Haitao Wang**, “*Research on the Sintering Characteristics of Typical Imported Iron Ores*”, M. S. Thesis, June, 2005, Changsha, China.
10. **Haitao Wang**, G. H. Li, X. H. Fan, Z. C. Huang and T. Jiang, “*Comparative Study of Metallurgical Properties of Several Blast Furnace Burdens*”, *Iron & Steel*, 41(1), 2006, 32-37. (in Chinese)
11. K. C. Zhang, F. C. Tian, D. Q. Zhu and **Haitao Wang**, “*Present Status and Prospect of Sintering Technology of Limonite*”, Symposium of the 8th National Ironmaking Raw Material Academic Conference, Sept., 2003, Laiwu, China.

Patents

1. One Method of Acidic Pellet Preparation for Blast Furnace from Iron Concentrate Bearing Tin and Zinc
Patent No.: 200510032098 (China, 2005)
2. One Method of Comprehensive Utilization of Magnetite Concentrate Bearing Tin and Zinc
Patent No.: 200510032098.X (China, 2005)
3. One Method of Acidic Pellet Preparation for Blast Furnace from V-Ti-Bearing Magnetite Concentrate
Patent No.: 200510032097.5 (China, 2005)
4. Composite Agglomeration Process for Preparing Blast Furnace Burdens
Patent No.: 200510032095 (China, 2005)

Oral Presentation

- “*Intrinsic Hydrogen Reduction Kinetics of Magnetite Concentrate Particles Relevant to a Novel Green Ironmaking Technology*”, 2nd International Symposium on High-Temperature Metallurgical Processing, TMS, 2011, Feb. 27 - Mar. 3, San Diego, CA.

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Research Skills

- Microsoft Office, Photoshop, Origin, HSC.
- SEM, XRD, Optical Microscope and sample preparation.
- Design and operation of high temperature reaction system in the lab.
- Titration analysis work.

Teaching Experience

- Aug. ~ Dec. 2008: Taught the lab class of High Temperature Chemical Processing.
- Aug. ~ Dec. 2009: Taught the lab class of High Temperature Chemical Processing.
- July ~ Aug. 2004: Instructed production practice internship of Juniors in Wuhan Iron and Steel Company, Hubei, China.
- Feb. ~ June 2004: Assisted advisor to instruct three senior undergraduates' research work of their theses, Central South University, China.
- July ~ Aug. 2003: Instructed production practice internship of Juniors in Xiangtan Iron and Steel Company, Hunan, China.

Awards and Honors

- **Outstanding Teaching Assistant Award** of the Department of Metallurgical Engineering, 2009~2010, University of Utah. (Class: **High Temperature Chemical Processing, Rate Processes**)
- **Outstanding Teaching Assistant Award** of the College of Mines and Earth Science, 2008~2009, University of Utah. (Class: **High Temperature Chemical Processing, Rate Processes**)
- **Outstanding Teaching Assistant Award** of the Department of Metallurgical Engineering, 2008~2009, University of Utah. (Class: **High Temperature Chemical Processing, Rate Processes**)
- **Outstanding Graduate Student Award**, 2004~2005, Central South University, China.
- **Graduation with Honor**, June, 2002, Central South University, China.
- **First-Class Scholarship** (3/133), 09/1998 ~06/1999, 09/1999~06/2000, 09/2001~06/2002
- **“XiangYin”** Fellowship, Supported by China Business Bank in Hunan Province, 09/2000.
- **“Hu Run”** Fellowship, China, 09/1998.