

Program

Rare Earth Minerals/Metals – Sustainable Technologies for the Future

August 12-17, 2012

San Diego, California, USA

Conference Chair:

**Daniel Tao
University of Kentucky**

Co-Chairs:

Karl Gschneidner, Rick Honaker, Keith Delaney, Ram Darolia



Engineering Conferences International

32 Broadway, Suite 314 - New York, NY 10004, USA

Phone: 1 - 212 - 514 - 6760, Fax: 1 - 212 - 514 - 6030

www.engconfintl.org – info@engconfintl.org

The Bahia Hotel
998 West Mission Bay Drive
San Diego, CA 92109
T: 1-858-488-0551

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Sunday, August 12, 2012

15:00 – 17:00	Registration (Mission Foyer)
17:00 – 17:45	Welcome Reception
17:45 – 18:00	Opening Remarks /Introduction
18:00 – 19:00	Keynote Address Diana Bauer - U.S. DOE Office of Policy and International Affairs DOE's Critical Materials Strategy
19:00 – 20:30	Buffet Dinner

NOTES

- Technical sessions are in Mission B& C.
- All meals except the luncheon exceptions below are in Mission A.
- Luncheons on Tuesday and Thursday are at the Pond.
- Poster Sessions are in Mission A.
- Audiotaping, videotaping and photography of presentations are strictly prohibited.
- Speakers – Please leave at least 5 minutes for questions and discussion. Be available for discussion during meals and social periods.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Be sure to check your contact information on the Participant List in this program and make any corrections to your name/contact information online. A corrected copy will be sent to all participants after the conference.

Monday, August 13, 2012

07:00 – 08:30 Breakfast

Recent Trends in REE Separation and Applications

09:00 – 09:05 Session introduction – **Karl Gschneidner**

09:05 – 09:50 **Plenary Lecture**

Keith Delaney – Former executive of Rare Earth Industry and Technology Association, USA

The intellectual infrastructure crisis

09:50 – 10:20 **Shengming Xu** - Tsinghua University, China

Research progress on extraction and separation of rare earths in Tsinghua University

10:20 – 10:50 Coffee break

10:50 – 11:20 **Ram Darolia** – GE Aviation, USA

Use of rare earth elements in aviation and power generation industry

11:20 – 11:50 **Atsushi Muramatsu** - Tohoku University, Japan

Alternate material of ITO for advanced transparent conductive oxide

11:50 – 14:00 Lunch

REE Analysis and Characterization

14:00 – 14:05 Session Introduction – **Corby Anderson**

14:05 – 14:35 **Jan D. Miller** - University of Utah, USA

Rapid scan radiography and high resolution x-ray micro tomography for the analysis of rare earth resources

14:35 – 15:05 **Patrick Zhang** – Florida Industrial and Phosphate Research Institute, USA

Recovery of critical elements from Florida phosphate: phase I. Characterization of rare earth elements

15:05 – 15:35 **Li Liu** - Beijing University of Chemical Technology, China

Properties, preparation and application of rare earth/polymer functional materials

15:35 – 16:05 Coffee Break

16:05 – 16:35 **Jinesh Jain** – USDOE-National Energy Technology Laboratory, USA

Source characterization for abundance of the rare earth elements (REE)

16:35 – 17:05 **Yuefeng Deng** - Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, China

Study on the extraction kinetics of La(III), Ce(IV) and Ce(IV)-F mixture systems with bifunctional ionic liquid extractant

17:05 – 17:15 Introduction of Poster Session papers by Sheng Wu and Maria J San Jose (5 minutes each with a few slides)

18:30 – 20:00 Dinner

20:00 – 21:30 Poster Session/Social Hour

Tuesday, August 14, 2012

07:00 – 08:30 Breakfast

Green Processes for REE Separation and Extraction

09:00 – 09:05 Session introduction – **Daniel Tao**

09:05 – 09:50 **Plenary Lecture**
Chun-Hua Yan, – Peking University, China
Make the rare earth separation more green and efficient

09:50 – 10:35 **Plenary Lecture**
Xiaowei Huang - General Research Institute for Nonferrous Metals, China
Pollution prevention and treatment technology in rare earth mineral metallurgy and separation process

10:35 – 11:05 Coffee break

11:05 – 11:35 **Yongxiang Yang** - Delft University of Technology, Netherlands
Recovery of rare earth metals from neodymium magnet residues of shredded hard disc drives

11:35 – 12:05 **TBD**

12:05 – 14:00 Lunch

Synthesis and Preparation of REE Materials

14:00 – 14:05 Session Introduction – **Chun-Hua Yan**

14:05 – 14:35 **R. William McCallum** - The Ames Laboratory, Iowa State University, USA
Reaction pathways and crystal growth of rare earth compounds containing volatile and toxic elements

14:35 – 15:05 **Li Liu** – Beijing University of Chemical Technology, China
A new type lead-free medical x-ray shielding material prepared by rare-earth/polymer composite

15:05 – 15:35 **Wenyuan Wu** – Northeastern University, China
Effect of cerium doping on microwave radiation hydrothermal synthesis of Y/SBA-15 micro-mesoporous molecular sieve

15:35 – 16:05 Coffee Break

16:05 – 16:35 **Bian Xue** – Northeastern University, China
Study on preparation of CeO₂ by CeCl₃ spray pyrolysis

16:35 – 17:05 **Jun Zhang** - Inner Mongolia University, China
Preparation, porous structure, synergistic interaction and formaldehyde catalytic oxidation of three dimensionally ordered macroporous Au/CeO₂-MO_x (M=Co, Mn, Ti, Ni, Cu, Fe, and Mo) catalysts

17:05 – 17:20 Introduction of Poster Session Papers by Linyan Li, Shenming Xu, and Jie Zhang (5 minutes each with a few slides)

18:30 – 20:00 Dinner

20:00 – 21:30 Poster Session/Social Hour

Wednesday, August 15, 2012

REE Separation Science and Technology

07:00 – 08:30	Breakfast
09:00 – 09:05	Session introduction – Rick Honaker
09:05 – 09:50	Plenary Lecture Jan Miller –University of Utah, USA Surface chemistry features associated with bastnaesite flotation
09:50 – 10:35	Plenary Lecture Zhenghe Xu - University of Alberta, Canada Fundamental study on reactive oily bubble flotation technology
10:35 – 11:05	Coffee Break
11:05 – 11:35	Jinhong Zhang – University of Arizona, USA Applying an atomic force microscopy in the study of froth flotation
11:35 – 12:05	Qi Liu - University of Alberta, Canada Concentration of niobium oxide minerals from carbonatite ores by froth flotation
12:05 – 12:35	Daniel Tao – University of Kentucky, USA Fundamental studies of nanobubble enhanced froth flotation for mineral processing
12:35	Boxed Lunch Free time / <i>ad hoc</i> sessions
19:30	Dinner

Thursday, August 16, 2012

New Development in Solvent Extraction

- 07:00 – 08:30 Breakfast
- 09:00 – 09:05 Session introduction – **Ram Darolia**
- 09:05 – 09:50 **Plenary Lecture**
Karl A. Gschneidner, Jr., – Iowa State University, USA
Magnetic refrigeration and cooling - an energy efficient and green cooling technology for the 21st century
- 09:50 – 10:20 **Wuping Liao** - Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, China
Recovery of thorium from rare earth ores in Baotou and Sichuan of china
- 10:20 – 10:50 Coffee break
- 10:50 – 11:20 **Kun Huang** - Institute of Processing Engineering, Chinese Academy of Sciences, China
Liquid-liquid-liquid three phase extraction for separation of rare-earth metal ions
- 11:20 – 11:50 **Ji Chen** – Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, China
Ionic liquids: promising solvents and extractants for rare earth green separation
- 11:50 – 12:20 **Yongqi Zhang** - General Research Institute for Nonferrous Metals, China
Extraction mechanism of thorium and fluorine in the process of bastnasite leach solution by HEHEHP
- 12:20 – 14:00 Lunch

Alternative Sources of REE and Applications

- 14:00 – 14:05 Session Introduction – **Patrick Zhang**
- 14:05 – 14:35 **Yanping Xiao** - Materials Innovation Institute, Netherlands
Recycling of rare earth metals from secondary resources: technology review
- 14:35 – 15:05 **Corby G. Anderson** - Colorado School of Mines
A survey of recycled rare earths metallurgical processing
- 15:05 – 15:35 **Hamid Mazouz** - OCP, Morocco
The phosphate rare earths elements as an alternative to conventional resources
- 15:35 – 16:05 Coffee Break
- 16:05 – 16:35 **Biplab Sarma** – University of Utah
Recycling of neodymium from magnetic waste via electrochemical route
- 16:35 – 17:05 **Ming Zhang** – University of California, Davis, USA
Water splitting by near infrared radiation using composite films of hematite and rare earth doped upconversion nanocrystals
- 18:30 – 19:30 Reception
- 19:30 – 21:30 Conference Banquet

Friday, August 17, 2012

07:00 – 08:30 Breakfast

Open Discussion and Future Planning

09:00 – 10:00 Session introduction – **Ram Darolia**

09:55 – 10:00 Closing comments

10:00 Departure – Boxed lunches available for pick-up

Poster Presentations

- 1. Extraction of re sulfate using saponified heh(ehp) with barrier agent**
Sheng Wu, China Minmetals (Beijing) Research Institute
- 2. A novel technology to separate ore materials in conical spouted bed contactor**
Maria J San Jose, University of the Basque Country, Spain
- 3. Study on the thermal stability of rare earth borates**
Linyan Li, Tsinghua University
- 4. Design and synthesis of high performance scandium extractant: a theoretical study on structure-property relationship**
Shenming Xu, Tsinghua University, China
- 5. Research on enrichment characteristics of REE and P₂O₅ during weathering process of REE-bearing phosphate rock in Zhijin, Guizhou province**
Jie Zhang, Guizhou University, China