

**Florida Polytechnic University
Board of Trustees
June 10, 2014**

Subject: Florida Industrial and Phosphate Research Institute Update

Proposed Board Action

No action required - Information only

Background Information

Dr. Birky will give a description of recent FIPR Institute activities and accomplishments. The following items will be presented:

- Integration of the Institute within Florida Polytechnic University
- The Phosphate Research and Activities Board
- The Institute's Funding and Financial Status
- Financial Strategy and Staffing Plan

The attached progress report provides a summary of the Institute's completed and ongoing efforts for the current fiscal year, listings of publications, presentations / meetings, and upcoming activities.

Supporting Documentation: Florida Industrial and Phosphate Research (FIPR) Institute Progress Report

Prepared by: Brian Birky, Interim Executive Director, FIPR Institute

Florida Industrial and Phosphate Research (FIPR) Institute Progress Report

In general, we continue to conduct and fund research to address the Institute's 2011-2016 Strategic Plan, and to provide information and educational materials to the public. Recent and ongoing efforts include:

- Recovery of Rare Earth Elements (REE) from mining, beneficiation, and processing streams
- Removal of magnesium from ore without significant phosphate losses prior to sulfuric acid attack to produce phosphoric acid
- Preparation and chemical analysis of sea floor drill core samples
- Mining face analysis using laser induced breakdown spectroscopy (LIBS)
- Biological control of invasive and exotic plant species
- Establishment of native vegetation on disturbed lands
- Sulfur recovery from phosphogypsum
- Radiological risk estimates from uses of phosphogypsum
- STEM education in schools

Publications

- *Control and Management of Cogongrass and Other Exotic Grasses on Disturbed Lands in Florida*. FIPR Publication
- *A New Collector - Activator Scheme for Low Grade Phosphate Flotation*. Under review by International Journal of Mineral Processing
- *Upgrading Phosphate Flotation Tailings for REE- Extraction*. Under review by Minerals and Metallurgical Processing Journal
- *REE Extraction from Wet Process Products: Phosphoric Acid, Phosphoric Acid Sludge and Phosphogypsum*. Under review by Hydrometallurgy
- *REE Extraction from Phosphate Rock: In-line REE Extraction from Wet Process*. Under review by Chemical Engineering: Process Intensification Journal
- *Development of a Personal Sampler for Simultaneous Sampling of Gases and Aerosols*. Under review by Annals of Occupational Hygiene
- *Impacts of Hazardous Air Pollutants Emitted from Phosphate Fertilizer Production Plants on their Ambient Concentration Levels in the Tampa Bay Area*. Under review by Air Quality, Atmosphere & Health
- Completed an update of *Radiation in the Phosphate Industry*, set of 3 DVDs divided into 15 Lessons

Presentations / Meetings

- Dr. Birky - Presentation to teachers: *Rad 101 (Radioactivity and Radiation)* July 25, 2013
- Dr. Zhang - *Comprehensive Recovery of Valuable Elements from Phosphate*. Presented at the 7th International Conference on Rare Earth Development and Application, Ganzhou, China, August 10-13, 2013
- Dr. Birky - IFA NORM Working Group, Istanbul. Convenor and presenter. Presentation: *Overview of Industrial NORM in the USA with Emphasis on the Phosphate Industry*, September 26-28, 2013

- Dr. Zhang - *Prescribing the Right 'Sleeping Pills' for the Phosphogypsum Stack Managers*. Presented at the 2013 Annual Regional Phosphate Conference, Lakeland, FL, October 9-10, 2013
- Dr. Birky on Doctoral Committee, Ms. Lin Shou dissertation defense, UF. *Diffusional Release of Pollutants into Ambient Air and Method for Enhancing Diffusional Collection in Air Sampling*, October 29, 2013
- Mr. Albarelli - University of Florida, Engineering School of Sustainable Infrastructure & Environment, Geotechnical and Waste Management – Presentation: *Phosphogypsum Stack Management and Utilization*, October 2013
- Mr. Albarelli - Florida A&M University, School of the Environment – Presentation: *Environmental Policy and Sustainability in the Phosphate Industry*, November 2013
- International Atomic Energy Agency (IAEA) Fellowship, FIPR hosted Mr. Amine Fourati, visiting scientist from Tunisia, who was interested in recovery of uranium and REE from phosphoric acid and production waste streams, January 13-17, 2014
- Critical Materials Institute (established with a grant from the Dept. of Energy), FIPR Hosted a Team Member Workshop, January 16-17, 2014
- The Institute held a meeting of its Phosphate Research and Activities Board on January 31, 2014. Elections were held and Mrs. Ava Parker was elected Board Chair for a one-year term. When Dr. Avent assumes the position of President of the University, he will automatically replace Ava on the Board according to the Florida Statutes, but will not hold the position of Chair or Vice-Chair unless elected to one of those positions at a subsequent meeting.
- Dr. Zhang - *Reducing MgO Content in Florida Phosphate Concentrate*. Presented at the 2014 SME Annual Meeting, Salt Lake City, Utah, February 23-26-2014
- Dr. Birky - Public Meetings, New Wales Gyp Stack Expansion. Bradley community on February 25, 2014 and Mulberry on February 27, 2014
- GIW International Pumping Class, March 14, 2014
- Mr. Albarelli - Mosaic Manatee ICAP – Presentation: *Phosphogypsum Stack Management and Utilization*, March 27, 2014
- Dr. Birky - Bartow Chamber of Commerce, Leadership Program – Presentation and Tour: *Overview of FIPR Institute, and Natural Radioactivity and Public Health in the Florida Phosphate Mining Region*, March 20, 2014
- Dr. Birky - Polk Leadership, Presentation: *Phosphate 101*, April 24, 2014
- Dr. Birky addressed the 2014 Global Technical Symposium of the International Fertilizer Industry Association (IFA) attended by the CEOs of the world's major fertilizer producers including Mosaic
- Dr. Birky presided over the IFA NORM Working Group, Amsterdam, March 31-April 3, 2014
- Dr. Richardson - Florida Exotic Pest Plant Council Conference, *Selective Control of Invasive Exotic Grasses*, April 29, 2014

Upcoming Activities

- Dr. Birky to speak at the Florida Association for Water Quality Control, June 11, 2014

- Dr. Zhang and Dr. Birky to author and present an invited paper at the International Symposium on Uranium Raw Material for the Nuclear Fuel Cycle in Vienna, Austria, June 23-27, 2014
 - Sponsored by IAEA, OECD Nuclear Energy Agency, World Nuclear Association, and United Nations Economic Commission for Europe
- Dr. Birky and Mr. Albarelli to author and present an invited paper to the International Fertiliser Society (IFS) in London, July 2-3, 2014
- FIPR Institute Summer Teacher Workshop, July 21-26, 2014