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W. J. Kroll Institute for Extractive Metallurgy

A grant from the late W. J. Kroll, the inventor of the Kroll Process for the production of Titanium and Zirconium, enabled the establishment of an Institute for Extractive Metallurgy in the Department of Metallurgical and Materials Engineering. Today the primary focus of the Institute is the development of new technologies for the physical-chemical processing of materials. This includes the production and refining of metals, the processing of wastes and hazardous materials, the recycling of materials, and the synthesis of advanced materials. The Institute supports the education of students through the awarding of fellowships and research assistantships, provides opportunities for visiting scholars, arranges for the teaching of short courses in subjects related to the mission of the Institute, and undertakes a wide range of sponsored research projects.

Background:

- Established in 1973 with a grant from the late famous extractive metallurgist, Dr. William Justin Kroll
- Financial support for research from individual research contracts from industry and federal sources which currently amounts to $300,000 per year

Areas of Expertise:

- Extractive metallurgy
- Chemical processing of materials, including materials synthesis
- Processing of waste materials and the development of clean technologies
- Corrosion and reactive metals processing
- Production of new minerals-based by-products
- Process development research focusing on improved commercial operations

Sponsoring Organizations:

- Industry
- Federal funding agencies

Method of Technology Transfer:

- Publications, journals, national and international conferences
- Industry sponsor meetings
- Ph.D. and M.S. graduates employed by industry and national labs

Spin-offs / Contributions:

- Development of new environmentally accepted extractive metallurgy techniques and processes
- Environmental process control in metal extraction and decrease in waste process streams
- Patents: e.g. plastics recycling using flotation techniques; reprocessing of lead-acid battery wastes; reduced waste process streams in plutonium processing; recovery of valuable by-products in electric arc furnace ducts, and rendering remaining dust non-hazardous
- Development of new environmentally accepted pigments
- Development of thermal processing techniques for the annealing of rapidly-quenched alloys
- Identification of process parameters for the manufacture of cementite for use in steel making

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