December 2015

The GeMMe “Mineral Processing and Recycling” group at the University of Liege, Belgium is looking to engage a suitable candidate to be in charge of a project described below (pending on negotiation/approval from the Walloon administration within the BEWARE-ACADEMIA call).

Profile: The candidate should ideally possess a PhD in the field of hydrometallurgy/extractive metallurgy supported by relevant publications record. Industrial experience is desired but is not compulsory. If not in possession of PhD, he/she should prove equivalent experience (+5 Years) in the field, e.g. being involved as lead researcher in R&D projects and delivering high-level of publications.

Project summary

The “VALuable METals through innovative HYDROMetallurgy” VALMETHYDRO project has an objective to optimize and improve the CMI synthetic rutile process for rendering it capable to efficiently treat ilmenite-based resources with lower grade and complex mineralogy.

In the existing CMI process, high-grade ores are roasted at temperatures between 800 and 1000 °C to selectively and uniformly magnetize the ilmenite fraction so that gangue minerals may be easily removed subsequently with high recoveries, for ex. by dry magnetic separation. Roasting enhances leaching operation for iron removal and at the same time renders the titania fraction insoluble. To this end, oxidative and reducing roasting is practiced. Roasted ilmenite is leached in hot hydrochloric acid to remove almost completely iron and other unwanted impurities, thereby enhancing titanium dioxide content. The enriched titanium bearing material after leaching of reduced ilmenite is called synthetic rutile (SR). The quality of the synthetic rutile depends mainly on the effectiveness of the leaching process and on the type of ilmenite raw source (mineralogy, metal grade, gangue, granulometry, ...).

To reach project objective leaching behavior of various ilmenite ores provided by the industrial sponsor will be studied. The experimental study will encompass focused pre-treatment impacts on the raw material, supported by thermodynamic and kinetic modeling, process-oriented characterization, potentiometry, reactor design. Process parameters (roasting, leaching, downstream treatment) leading to an efficient titania purification and possible recovery of value-added by-products will be outlined and up-scaled.

Project duration: 3 years

Remuneration: University level 116S (i.e. 80 – 90 K€/year brut for PhD holders) based on fellows seniority, plus 450€/month mobility allowance.

The fellow in charge of the project will be hosted at the University of Liege, but call rules require an active interaction with the industrial partner with spending sufficient time at CMI facilities in Montabaur, Germany or Liège and Louvain-la-Neuve, Belgium. (http://www.cmigroupe.com)

For further information:

Prof. Stoyan Gaydardzhiev - responsible for the research Unit “Mineral Processing & Recycling”, contact details below.