Your World to a Better Future

VUT
Vaal University of Technology

JOB PROFILE

JOB TITLE	Post-doctoral Research Fellow – Applied Mineral Processing
FACULTY/DEPARTMENT	Metallurgical Engineering
LOCATION/CAMPUS	Vanderbiljpark
COMMENCEMENT	Immediate

BACKGROUND OF FOCUS AREA

APPLIED MINERALS PROCESSING (PRIMARY AND SECONDARY RESOURCES)

Strategic Importance of the Focus Area:

Various comminution and beneficiation techniques are employed towards concentration, which is the first step in the complete flowsheet for extraction from primary resources or material recovery from wastes for cyclic material use. With leaner and more complex primary ore deposits and more assorted waste stream to be processed, attaining high grade concentrate at maximum recoveries, without sacrificing energy and time efficiency in the comminution and concentration operations is becoming more and more demanding. Sustainablility in material use with affordability hinges strongly on research and developments to obtain processing conditions and approaches that give cleaner products under these constraints.

South Africa is a major player in the global mineral processing and metal production. The Vaal University of Technology is also a stake holder in the goal of managing waste as a resource, particularly on the e-waste processing focus. A comprehensive attention is needed in primary and secondary resources. Hence, this research niche is being advanced in the Metallurgical Engineering department of the University. Human resources for industry and varied process solutions will continuously remain major needs in the quest for maximising resource recovery from new and existing mines, and from ever increasing waste streams.

Purpose of the Focus Area:

The research and development is towards obtaining processing conditions and parameters that maximise materials resource recovery from both minerals and waste streams, and developing entirely new improved processing approaches. New mineral deposits with more diverse occurrence and new generations of emerging waste materials will be investigated, as well as improvements on existing operations. Applied mineral processing solutions are always resource specific. Existing solutions can be adapted for mineral (primary) resources with significant matching characterization, while there will always be the need for improvement towards maximising resource recoveries in existing operations. Waste (secondary) resource processing serve the dual purposes of preserving the ecosystem while recovering material resources to sustain demands.

PURPOSE STATEMENT
This position exists for an applied mineral processing post-doctoral research fellow that will ensure: • Timely execution of applied mineral processing research and development objectives in the department. • Prompt dessemination of research findings in the department via journals publications, conferences submissions, and research seminar presentation. • Continous identification of pressing research issues in the focus area and novel problem definitions.

A. KEY PERFORMANCE AREAS

(NOT INCLUDING RESPONSIBILITIES THAT ON AVERAGE TAKE UP LESS THAN 5% OF TIME)

RESPONSIBILITIES AND MAIN OUTPUTS FOR THIS POSITION
• Conducting research in applied mineral processing involved in ROM, tailings, concentrates and waste processing. • Publication of findings in ISI, DHET accredited journals in metallurgical and materials engineering. • Mentoring postgraduate and undergraduate research students working in hydrometallurgy projects. • Operation and oversight of analytical equipment.

B. QUALIFICATIONS AND EXPERIENCE REQUIRED FOR APPOINTMENT TO THE POSITION

ESSENTIAL QUALIFICATION AND EXPERIENCE	
FORMAL EDUCATION	Doctorate degree with research focus in applied mineral processing obtained within the past 5 years.
EXPERIENCE	• Sound research track record including publications in ISI, DHET accredited journals and conference papers. • Broad and strong background in mineral processing and extractive metallurgy. • Industrial or related experience and/or supervision of postgraduate students.

COMPETENCIES REQUIRED FOR APPOINTMENT TO THE POSITION
• Research problem identification, formulation and hypothesising • Hands on experience with different metallurgical research equipment • Computer applications in applied minerals processing, materials science and engineering research • Communication, technical writing and presentations • Language editing and Use of English • Strong quality orientation, ability to work in a stressful and pressurised environment • Goal, priority and timeline setting and achievement • Project management

CONTACT DETAILS FOR RECEIPT OF APPLICATIONS
Ms. Retha Visagie – rethav@vut.ac.za; Prof. I. O. Otunniyi – iyiolao@vut.ac.za

JOB PROFILE

JOB TITLE	Post-doctoral Research Fellow – Hydrometallurgy
FACULTY/DEPARTMENT	Metallurgical Engineering
LOCATION/CAMPUS	Vanderbiljpark
COMMENCEMENT	Immediate

BACKGROUND OF FOCUS AREA

HYDROMETALLURGICAL PROCESSING OF PRIMARY AND SECONDARY RESOURCES

Strategic Importance of the Focus Area:

Continuously emerging improved technologies and products, ever increasing demand for such, and high rates of waste generation are all linked. Hence, leaner primary ore deposits and more complex waste stream must be processed to meet the resulting demand for raw materials. Hydrometallurgical processing techniques, with advantages of selectivity in treating low grade and assorted resources, must be improved to treat the ever more assorted material streams. The Vaal University of Technology is already a major stake holder in this area, particularly in the e-waste processing focus. Hence, this vital research niche is being fortified in the Metallurgical Engineering department of the University. Human resources for the industry and varied process solution will continuously remain major needs in the quest for managing wastes as a resource, and in maximising resource recovery from new and existing mines.

Purpose of the Focus Area:

Hydrometallurgical process solutions are always resource specific. Existing solutions can be adapted for mineral (primary) resources with significant matching characterization, while there will always be the need for improvement towards maximising resource recoveries in existing operations. New deposits with peculiar mineral associations will also need to be exploited and processing solutions must be developed. Waste (secondary) resource processing serves the dual purposes of preserving the ecosystem while recovering material resources to sustain production demands. These goals will drive investigations in waste processing.

PURPOSE STATEMENT

This position exists for a hydrometallurgical post-doctoral research fellow that will ensure:

- Timely execution of hydrometallurgy research and development objectives in the department.
- Prompt dessemination of research findings in the department via journals publications,

conferences submissions, and research seminar presentation. • Continous identification of pressing research focus area and novel problem definitions.

B. KEY PERFORMANCE AREAS

(NOT INCLUDING RESPONSIBILITIES THAT ON AVERAGE TAKE UP LESS THAN 5% OF TIME)

RESPONSIBILITIES AND MAIN OUTPUTS FOR THIS POSITION
• Conducting research in hydrometallurgical processes involved in ore and waste processing. • Publication of findings in ISI, DHET accredited journals in metallurgical and materials engineering. • Mentoring postgraduate and undergraduate research students working in hydrometallurgy projects. • Operation and oversight of analytical equipment.

B. QUALIFICATIONS AND EXPERIENCE REQUIRED FOR APPOINTMENT TO THE POSITION

ESSENTIAL QUALIFICATION AND EXPERIENCE	
FORMAL EDUCATION	Doctorate degree with research focus in hydrometallurgy obtained within the past 5 years.
EXPERIENCE	• Sound research track record including publications in ISI, DHET accredited journals and conference papers. • Industrial or related experience and/or supervision of postgraduate students. • Broad and strong background in mineral processing and extractive metallurgy.

COMPETENCIES REQUIRED FOR APPOINTMENT TO THE POSITION
• Research problem identification, formulation and hypothesising • Hands on experience with different metallurgical research equipment • Computer applications in materials science and engineering research • Communication, technical writing and presentations • Language editing and Use of English • Strong quality orientation, ability to work in a stressful and pressurised environment • Goal, priority and timeline setting and achievement • Project management

CONTACT DETAILS FOR RECEIPT OF APPLICATIONS
Ms. Retha Visagie – rethav@vut.ac.za; Prof. I. O. Otunniyi – iyiolao@vut.ac.za