

**JOB OPPORTUNITY: POST-DOCTORAL RESEARCH FELLOW**

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| <b>JOB TITLE</b>          | Post-doctoral Research Fellow:<br>Materials Science for Additive and Advanced Manufacturing |
| <b>FACULTY/DEPARTMENT</b> | Metallurgical Engineering                                                                   |
| <b>REPORTING TO</b>       | Metallurgical Engineering, VUT & TTI, VUT                                                   |
| <b>LOCATION/CAMPUS</b>    | Vanderbijlpark and Sebokeng Campuses                                                        |
| <b>CLOSING</b>            | Nov. 13, 2020                                                                               |

**BACKGROUND OF FOCUS AREA****MATERIALS SCIENCE FOR ADDITIVE & ADVANCED MANUFACTURING**

Additive manufacturing (AM) has been established at the TTI of VUT, with particular strength in polymer and ceramic additive manufacturing. Remarkable progress has been made in technology acquisition, adaption and commercialization in this area, with many product prototypes designed and produced for clients using 3D printing with commercial feeds on voxeljet printer and other facilities. Developing on the AM technical expertise, the TTI in co-operation with the Metallurgical Engineering department of the University, is embarking on fundamental research focusing on applied materials science for additive and advanced manufacturing.

*Strategic Direction:* Development of novel applications in AM will require investigations of wider spectrum of materials for AM. It is therefore strategic to explore the extensive family of materials – polymer, metallic alloys and ceramics to understand the AM application specifics. This is the direction being explored within this research focus. Building on the existing strength in polymer and ceramic additive manufacturing at TTI, the research will take off on polymeric materials for additive manufacturing. Applications such as AM of bio-polymers, AM in micro-fluidic devices, and AM for polymer recycling, are within the immediate view. This will lead to and accommodate new polymers and polymeric materials development; related AM process development; design for specific polymers in AM and scientific applications; innovation, technology development, transfer and commercialisation.

**PURPOSE STATEMENT**

The post doctoral position at this stage will initiate fundamental research in polymeric materials for additive manufacturing applications, as well as participate in various application development investigations. This is to ensure novel problem definitions and identification of current research questions in the focus area, prompt dissemination of findings via peer reviewed publications, conferences participations and research seminar presentations.

**KEY RESEARCH FOCUS**

Polymeric material development for additive manufacturing, from virgin or recycled polymers.

## A. KEY PERFORMANCE AREAS

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

### RESPONSIBILITIES AND MAIN OUTPUTS FOR THIS POSITION

- Research problem formulation and execution within the whole focus area of polymer additive manufacturing, and specifically in application to AM feed production from secondary (waste) sources.
- Participation in other AM or other research projects as may be requested.
- Mentoring and co-supervision of research students on AM, and related topics.
- Attendance and contribution at research meetings and deliberation.
- Dissemination of research findings from the above activities via publications of findings in peer reviewed journals and conference proceedings.
- Assuming responsibility and oversight of facility when and where necessary.

## B. QUALIFICATIONS AND EXPERIENCE REQUIRED FOR APPOINTMENT TO THE POSITION

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|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>FORMAL EDUCATION</b> | A PhD degree in polymeric materials, polymer engineering, polymer technology, polymer science, or any science and engineering field but with research strength in polymeric materials science and engineering.                                                                                                                 |
| <b>EXPERIENCE</b>       | <ul style="list-style-type: none"><li>• Sound research track record including publications in ISI, DHET accredited journals and conference papers.</li><li>• Industrial or related experience and/or supervision of postgraduate students.</li><li>• Experience in additive manufacturing will be a major advantage.</li></ul> |

### COMPETENCIES REQUIRED FOR APPOINTMENT TO THE POSITION

- Research problem identification, formulation and hypothesising
- Hands on experience with different research equipment
- Communication, technical writing and presentations
- Language editing and Use of English
- Goal, priority and timeline setting and achievement
- Project management

### CONTACT DETAILS FOR RECEIPT OF APPLICATIONS

Dr Malan van Tonder ([malanvt@vut.ac.za](mailto:malanvt@vut.ac.za)) and Prof I. O. Otunniyi ([iyiolao@vut.ac.za](mailto:iyiolao@vut.ac.za))