

The University of KwaZulu-Natal (UKZN) is committed to meeting the objectives of Employment Equity to improve representivity within the Institution. Preference will be given to applicants from designated groups in accordance with our Employment Equity Plan.

**COLLEGE OF AGRICULTURE, ENGINEERING AND SCIENCE**  
**POSTDOCTORAL RESEARCH FELLOWSHIP: Environmental Nanotechnology & Biotechnology for Water Treatment Systems (24 MONTHS)**  
**WATER SANITATION & HYGIENE RESEARCH & DEVELOPMENT (WASH R&D) CENTRE**  
**DISCIPLINE OF CHEMICAL ENGINEERING**  
**SCHOOL OF ENGINEERING**  
**HOWARD COLLEGE CAMPUS**

The WASH R&D Centre, located with Chemical Engineering at the University of KwaZulu-Natal (Durban, South Africa) is an externally funded team of professional researchers working on multidisciplinary projects in non-sewered sanitation.

The Centre invites applications for a Postdoctoral Research Fellow position in Environmental Nanotechnology and Biotechnology for Advanced Water Treatment Systems. This role offers an opportunity to work within a dynamic multidisciplinary team of engineers, chemists, materials scientists, biotechnologists, and social scientists, conducting research that spans fundamental materials and microbial science through to real-world application. The successful candidate will collaborate closely with local government partners, technology providers, and national/international research laboratories, contributing to an integrated research programme that combines advanced catalytic materials, biotechnological processes, and systems-level approaches to address critical water quality challenges.

The research programme integrates two complementary technological approaches across four key areas:

- (1) advanced catalytic materials and processes, including synthesis and characterisation of hybrid nanomaterials, development of advanced oxidation processes (AOPs), and sulfate/hydroxyl radical systems for degrading persistent pollutants and emerging contaminants;
- (2) environmental biotechnology for treatment systems, including monitoring sensitive bacterial populations, assessing microbial activity levels, and investigating chemical influent effects on biological processes;
- (3) microplastic transformation and environmental fate, investigating both catalytic/photocatalytic degradation pathways and microplastic interactions with microbial communities in treatment and discharge systems; and
- (4) integrated water systems modeling and impact assessment, including large-scale water balance modeling for pathogenic outbreak prediction and environmental impact assessment of both catalytic and biological treatment technologies.

The incumbent will work across the complete research spectrum from materials synthesis and microbial characterisation to field implementation and stakeholder engagement, with opportunities to translate laboratory discoveries into practical treatment technologies.

**Requirements:**

- PhD awarded within the last 5 years, in Environmental Engineering, Nanotechnology, Chemical Engineering, Biotechnology, Environmental Chemistry, Microbiology, or related field, with demonstrated expertise in EITHER
  - (a) nanomaterials/catalytic systems, advanced oxidation processes, and materials characterisation techniques (XRD, FTIR, SEM/TEM, BET, XPS) OR

**WASH R&D Centre (Howard College Campus)**  
**Discipline of Chemical Engineering, School of Engineering**  
**College of Agriculture, Engineering & Science**

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**Telephone:** +27 (0)31 260 3375 (office)/+27 (0)72 425 2741 (cell/mobile) **Email:** philpk@ukzn.ac.za **Website:** washcentre.ukzn.ac.za

(b) microbial ecology, environmental biotechnology, and molecular biology techniques for microbial community analysis, plus water quality assessment experience and a strong publication record. Candidates with experience bridging both domains are particularly encouraged.

- Based at UKZN for the duration of the appointment
- Proven track record of peer reviewed publications

Advantages include microplastic analysis, environmental catalysis or biological treatment systems, multidisciplinary team collaboration, and stakeholder engagement with government/industry partners.

**Applicants are required to submit the following:**

- (i) a covering letter highlighting their experience in meeting each of the minimum requirements as listed above.
- (ii) Research statement (max 2 pages)
- (iii) a detailed CV including the list of publications
- (iv) contact details for three referees
- (v) a certified copy of the applicant's doctoral degree certificate or PhD award letter
- (vi) a certified copy of the applicant's ID / permanent residency document / foreigners must be in possession of relevant permits.

**The Centre reserves the right to not make an appointment. An appointment is subject to the availability of funding.**

**Applications to be emailed to Kerry Philp, email: [philpk@ukzn.ac.za](mailto:philpk@ukzn.ac.za) before the closing date: 27<sup>th</sup> March 2026**

**Enquiries to be address to Prof. Randhir Rawatlal at [rawatlalr@ukzn.ac.za](mailto:rawatlalr@ukzn.ac.za)**

*Kindly note that the University of KwaZulu-Natal ("the University") is required to process any Personal Information (as defined by the Protection of Personal Act, 2013 "POPIA") submitted by candidates when applying for positions at the University. The University will endeavour to ensure that the appropriate security measures are in place and implemented for both electronic and paper-based formats that are used for processing of the personal information recorded through this recruitment and selection process. We refer you to the University's relevant Section 18 notice at [http://vacancies.ukzn.ac.za/Libraries/General\\_Documents/Section\\_18\\_Notice\\_-\\_Employees\\_and\\_Potential\\_Employees.sflb.ashx](http://vacancies.ukzn.ac.za/Libraries/General_Documents/Section_18_Notice_-_Employees_and_Potential_Employees.sflb.ashx)*