Postdoctoral Research Fellowship: Polymer Science (Analytical)
Host: Polymer Separation Group, Department of Chemistry and Polymer Science

About us: The Polymer Separation Group, part of the Chair in Analytical Polymer Science is an international research group working on physico-chemical structure elucidation of polymer materials, especially functional (bio)polymers. We are a joint research group with labs at the Leibniz-Institut für Polymerforschung Dresden (IPF) and Stellenbosch University (SU). Our current research focuses on the development of high-performance separation techniques for novel macromolecular architecture as well as biorelevant macromolecular systems. By focusing on high-performance analysis and the development of new characterization methods, we aim to elucidate the relationship between chemical structure, architecture, and material properties across nano-, meso- and macroscopic scales.

Position overview: We are looking for a highly motivated postdoctoral fellow to work on the elucidation of the relationship between structure and biological functions in *L. aestuarii* filaments using advanced methods of protein and macromolecular analysis. The fellow will be actively involved in the scientific work and teaching at the Polymer Separation Group, Dept Chemistry and Polymer Science, SU. We are looking for a candidate to join an interdisciplinary project investigating the molecular composition and structural properties of microbial sheaths. The role involves extracting and analyzing biomolecular components (e.g. polysaccharides, proteins) using a combination of aqueous/organic extractions and advanced techniques such as SEC-MALS, HPLC, FTIR, multidetector AF4, and NMR spectroscopy. The candidate will characterize macromolecular architecture, porosity, and surface properties using tools like AFM, GC-MS, zeta potential, and gas adsorption analysis. This work will contribute to reconstructing sheath structure-function relationships and facilitate comparative analysis across microbial strains. As part of the SU-IPF joint Polymer Separation Group, the researcher will be involved in a lively exchange of knowledge between the two institutions.

The fellowship is available for 3 years, but yearly renewal is based on satisfactory performance. Please note that postdoctoral fellows are not appointed as SU employees and, therefore, are not eligible for employee benefits. Postdoctoral fellowships are also awarded tax-free.

Requirements:

- PhD in the field of polymer science, physics or chemistry. Must have completed within the past 5 years.
- Reliable, diligent, independent way of working and motivation to develop new characterization methods.
- Excellent understanding of separation techniques for polymer analysis and specifically expertise in AF4 with multiple detection, LC-MS, SAXS, and scattering techniques
- Excellent communication skills, strong ability to work in a team and organizational skills
- Negotiation and mediation skills. Supervision experience and excellent English proficiency

Closing date: 17 June 2025 **Commencement**: 01 September 2025

Application process: Send a letter of application, your comprehensive CV, including publication list, proof of PhD qualification and two contactable references to Prof Albena Lederer alederer@sun.ac.za