

University of Botswana

Location: Gaborone, Botswana

URL: www.ub.bw

Scientific disciplines: Analytical Chemistry, particularly in the areas of Environment and Health

Description: The host laboratory is at the University of Botswana, based in the Chemistry Department. The University of Botswana has about 15,000 students, with Chemistry having about 20-30 postgraduate students at any given time. These postgraduate students are enrolled for in Masters and PhD programs in Analytical Chemistry, Natural Products Chemistry, Inorganic Chemistry or Physical Chemistry. The Department of Chemistry has between 25-30 Faculty members with PhD qualifications. The Department also has support technical staff who maintain and run instruments such as the mass spectrometer, NMR and various chromatographic and thermochemistry equipment.

Research in chemistry is in various areas, however, in Analytical Chemistry the research is focused on analysis for biotechnology and the environment. Specific topics of research are analysis of endocrine disruptors including persistent organic pollutants (POPs), developing sample clean-up methodologies for environmental and biological samples. These methods are employed in the determination of macronutrients in food as well as determination of metals in soil and plant sample as part of the hunt for plants that can be used for phytoremediation.

Analytical Chemistry has about 17 graduate students most of whom are privately funded. For the host research group, a small proportion of the research grant is from the University, however the majority of funds are from sources other than the University. To date, the research group has 5 PhD students, 3 postdoctoral fellows whose research stay ranges from 3- 6 months, and a visiting PhD student who will also stay for 3 months.

Laboratory Facilities: The UB Department of Chemistry has some of the best facilities in Africa. All the instrumentation is very modern, well maintained and has service contracts. The Department has a 300 and 600 MHz NMR, 2 Mass spectrometers (benchtop LC/MS and a single quad LC/GC/MS type), several gas and liquid chromatographs, capillary electrophoresis, super critical fluid extraction, thermochemistry facilities with an MS detector, elemental analyzer as well as a state of the art glass blowing workshop.

Computers at the University of Botswana are routinely replaced after every 3 years, so all computers are run on the most current operating systems. All members of staff have e-mail access through their computers in their offices. Graduate students have access to e-mail through the computer laboratory as well as available computers in their research

laboratory. The Department has not developed or acquired any facilities for clinical and animal care.

Affiliations: The University of Botswana is affiliated with the National Health Institute and Botswana College of Agriculture and Colleges of Education.

Placement description: Botswana provides unique opportunities in the areas of environment and health. Botswana is home to the largest inland delta in the world, the Okavango Delta. The Okavango Delta is also a designated Ramsar site. Because it receives its waters from Angola and Namibia, this shared water resource provides a unique opportunity for studies that relate to sediment, biota and the surrounding atmosphere. There is a need to establish baseline data in many aspects for this pristine aquatic system. Also the high prevalence of HIV/AIDS in Botswana provides opportunities for research in this area.

The Chemistry Department already has 2 NMR instruments 300 and 600 mhz which are less than 10 m apart, and has other modern instrumentation such as a high resolution ICP/MS, Mass spectrometry facilities as well as a Microscopy Unit that provides modern techniques such as TEM and SEM.

Desired applicants: The GSC fellow should be someone experienced in their own field, which will help the research group to expand. A postdoctoral fellow would be most useful. The atmosphere at UB would give such fellows the opportunity to try new frontiers, and this would also impact on the graduate students in the research group. The fellow would serve as possible future contact and collaborator for the research group as well as the graduate students.