FIRST Newsletter

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My Journey to Southern Africa with Crystallography: Part 2

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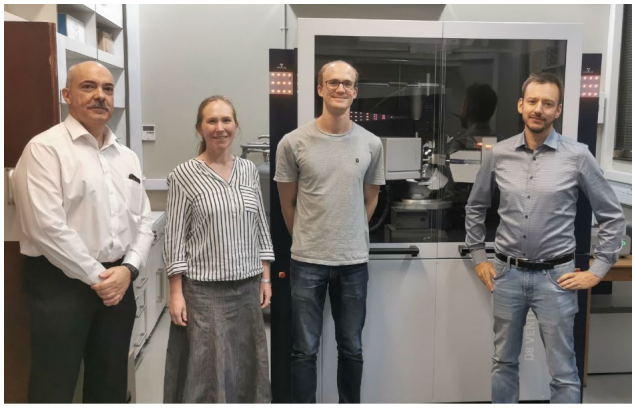
After three great days in Gaborone and Johannesburg, I took an early morning flight to Bloemfontein and headed directly to visit our users at the University of the Free State.

The crystallography laboratory of Free State is very busy and serves a wide variety of research projects. It also provides highly popular practical classes to students in the Chemistry Department.



University of the Free State - Bloemfontein

Dr. Alice Brink, Associate Professor, heads the crystallographic laboratory and is a senior lecturer in inorganic chemistry. Her main research area is in radiopharmaceutical anti-cancer drug development, where the crystal structure determination of metalorganic and inorganic compounds plays a central role. An established collaboration with the University of Manchester allows these institutions to investigate the coordination of organometallic complexes with proteins using protein crystallography.

Two Bruker diffractometers serve both their research and teaching needs. Young crystallographers benefit from the ease-of-use and intuitive STRUCTURE NOW software plugin in the D8 QUEST ECO, while the D8 VENTURE supports their advanced research analysis on proteins, metalorganic and inorganic compounds. Alice remarked that she was impressed by the speed of the instruments, which allows very fast sample screening. This enables them to collect quality data from the large number of samples measured in the lab.

With Dr. Alice Brink, Francois Jacobs, and Dr. Pennie Mokolokol, I spent two highly rewarding days training students and new researchers on the fundamentals of collecting good crystallographic data. We also had an engaging time together in the lab exploring the advanced features for tricky cases and tackling data and strategy optimization.

I could have stayed for another two days at the University of the Free State (or even more!), but I

had to say goodbye and start preparing for my next appointment: Rhodes University.

Makhanda (previously known as Grahamstown) is a pleasant town of about 140,000 people in the Eastern Cape province of South Africa. I had an early start at Rhodes University, with a packed two-day agenda. As in Bloemfontein, I spent the day providing training to a diverse group of crystallographers. One of the great things about training, is that I meet many different people. No two classes are the same. I always face new challenges and encounter different perspectives.

Rhodes University - Makhanda

I was with Dr. Vincent Smith, Professor Rui Krause, Baa Ebenezer, PhD student and learnt a lot from their work. Dr. Vincent Smith is Tutor and Demonstrator Coordinator with a research focus in design, synthesis and characterization of new functional materials breaking ground to diverse innovative applications. His teaching covers the areas of solid-state, supramolecular, and analytical chemistry as well as crystallography.

The group is a proud user of a recent but busy D8 VENTURE working in the service lab both for teaching young crystallographers and conducting their research work on porous materials, supramolecular and solid-state chemistry. We had some lively discussions about treating several very tricky datasets. We really explored the most advanced operation features of the diffractometer in detail. Thanks guys!

The difficult part is always when I have to leave, but I had another exciting day waiting for me in Stellenbosch.

When I arrived at the University of Stellenbosch, my colleague Dr. Michael Ruf was waiting for me with a nice cup of coffee. We were looking forward to the first day of our Workshop on High-Pressure Crystallography.

Distinguished Professor Len Barbour, DSc, Dr. Leigh Loots, Samantha Le Roux, MSc student, and Alexios Vicatos, post-doc, were the participants of the workshop.

University of Stellenbosch

Professor Len Barbour's research covers an extensive range of interests: structure-property relationship, gas storage/separation, crystal engineering, porous materials, anomalous thermal expansion, and method development. All these research fields benefit from a variety of expertly self-built devices and instruments. The short tour we did was really impressive!

One instrument I did recognize was their D8 VENTURE. The group really appreciates the ability of the goniometer to accommodate a variety of different high-pressure cells and the ease of mounting. The quality of the resulting data, and advanced software features help ensure they remain world leaders in the field of high-pressure.

The workshop itself was pretty intensive. In two days, we covered advanced techniques in sample mounting, data collection, data processing, and data evaluation. Challenging questions, lively discussions and great motivation made these two days extremely profitable and rewarding.

Time flies and my last stop was already planned for the following day, at the University of Cape Town. A working journey to South Africa would not be complete without my visit to Dr. Clive Oliver and his D8 VENTURE. This instrument has long been supporting Dr. Oliver's and the department's research, along with their other X-ray diffractometers D8 ADVANCE, D2 PHASER and Kappa Apex DUO.

In the area of porous materials, Dr. Oliver has separate collaborations with Professors L. J. Barbour (University of Stellenbosch), S. A. Bourne, M. R. Caira, and Dr. G. A. Venter (University of Cape Town). In the area of synthetic, large, multi-component, supra-molecular assemblies he established a separate collaboration with Professor Barbour and with Dr. Nikoletta Báthori (Cape Peninsula University of Technology).

It's a pleasure to see our diffractometers in such good hands!

I flew back to Karlsruhe with mixed feelings, struggling between the will to stay for a longer time and the need to come back. I believe I can say "Mission accomplished!" and my regular contact with all these groups certainly shortens the distance.

Reach out if you want to know more about our crystallography solutions. See you soon and thank you for reading.

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