**PX2 2018 Annual Report**

**COMPRES Facilities Comments**

**Arianna Gleason**

**Lowell Miyagi**

**Anne Pommier**

*-Science*: This facility keeps a successful development. Four very interesting scientific highlights are presented (about the lower mantle (spin transition), the inner core chemistry, and subduction dynamics).

This year again, the number of pubs has increased (28 vs. 15 pubs last year, and 6 two years ago). About 50% peer-reviewed papers are published in Earth science journals (13/28).

The pub list should only be for the past 12 months to reflect better the productivity over the review period. It seems that (some?) pubs from 2017 are from the previous review period.

*-User community:* COMPRES users have a very good access to the facility (156 shifts allocated).

3 PhD theses involved working at this facility.

It is not clear how many students/postdocs have been involved and trained.

Successful Workshop of the IUCr Commission on High Pressure (Hawaii), including a training session (48 participants).

*-Management team:* D. Zhang fully supported by COMPRES. He sent a clear personal report for his activities. However, his involvement in publications is low (only 2 co-authorships out of 28 pubs…(?))

Y. Hu still beamline student intern. It would be good to provide some info about the professional/career plans for this student. It seems she has defended her PhD (pub list). Also, she has not been involved in pubs.

New Jr. beamline scientist to be recruited (ongoing hiring process) (hire postponed as Y. Hu was available to conduct the work).

Why is there no mention of Sergey Tchakev? Last year, the committee mentions that this person has a heavy load with the gas loading system and the Brillouin system. Is he not receiving COMPRES support anymore? This is unclear to me. The gas loading system is only briefly listed once in the report (p.5)

Both PI Dera and Beamline scientist Zhang keep advertising the facility at meetings/workshops.

*-Facility:* Major improvement has been the upgrade of X-ray area detector (funded by COMPRES). Installation seems successful. I appreciate their Table 1 that compares clearly the old and new detectors.

Next proposed improvement: combining laser heating, time-resolved detector and high-pressure single crystal diffraction, to reach the earth’s lower mantle and core conditions. This is an exciting plan that should result in new and creative studies.

Budget looks reasonable.

*Comment: most of the overview section (p. 1) is a copy of the overview section from their last year report…*

**Mark Rivers**

PX^2 continues to progress quite well. Beamline developments and planned work are in excellent agreement with the user community needs. The main development in 2018 was the purchase of a new Pilatus 3S detector. This replaces the marCCD and has much faster readout and lower noise. This detector is being commissioned and is planned to be available to users in early 2019.

The program has attracted a large user base. This year 99 proposals were received requesting 716 shifts, compared to 61 proposals and 467 shifts in 2017, which is more than 50% growth in a single year. The oversubscription has increased from 1.08 to 1.63.

The PX^2 program was originally planned to use 50% of the beam time on this station, but is actually using over 70%. Approximately 2

One concern is the large fraction of users from Asia (39) compared to the USA (24). Many of these are from HPSTAR. 27% of the beamtime requests and 37% of the beamtime allocated were for COMPRES users. The facility should attempt to increase COMPRES usage of the facility.

The PI and beamline scientist helped to organize the IUCr Commission on High Pressure meeting in Honolulu in summer 2018. In conjunction there was a related COMPRES-supported training workshop on single-crystal diffraction. Hopefully these will increase the COMPRES demand for the facility.

There are 18 new publications are since the last report Nearly all are high-pressure single-crystal diffraction, and approximately 60% are in earth science. The publication rate has steadily increased each year, which is good to see.

The budget includes funds for a month of a technician at the University of Hawaii. There is only a very general description of what this person will do, and nothing about what he has done in the past.

The facility has interviewed candidates for the junior beamline scientist position, and plan to fill the position in early 2018.

**Chris Seagle**