

BMIT eNews | Fall 2025

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Dear BMIT User,

It's Been a While, Hasn't it?

Hello again, BMIT Users! We have been through quite a few changes over the years since our last eNews posted in Spring 2020. Having overcome the COVID-19 pandemic and the associated challenges during that period, more shifts and experiments have been delivered; more publications, presentations, and thesis have come out; and of course, the Canadian Light Source as a whole has been undergoing significant upgrades and maintenance as a part of the ongoing project that began in May 2024 with the new linear accelerator. With these changes, the BMIT that users have come to be familiar with over the years has also changed. From changes to the BMIT team to new equipment and techniques that we are excited to share with you once the facility returns to normal operation, we look forward to continuing to provide users with support for both current and future projects alike.

For this edition of eNews, we will cover some of the staffing changes that have occurred and introduce some new faces that you can expect to see helping out around BMIT, look into some of the new pieces of equipment we are working with and how these can introduce and improve techniques with imaging for a variety of experiments, and finally highlight some of the publications and research that has come out over the past couple of years from the amazing projects that you the users have been working on.

Staffing Changes

As some of our existing users are already aware, there have been a few changes to the BMIT team that have primarily taken place over the past year. Below you will find a brief summary of the changes to the BMIT staff and get to know the current team.

Former Members

Sergei Gasilov – Senior Scientist / Beamline Responsible

After over 7 years at the CLS, Sergei Gasilov left BMIT in January of 2025 to pursue a new position outside of the CLS. Sergei worked as both a Senior Scientist and the Beamline Responsible, supporting users on a variety of projects while specializing in the development of instruments and techniques for hard X-ray imaging microtomography. His contributions to the EZ-UFO extension and moving the team toward Linux has allowed users to easily reconstruct data using a graphical interface, accelerating projects for everyone at BMIT.



Arash Panahifar - Scientist

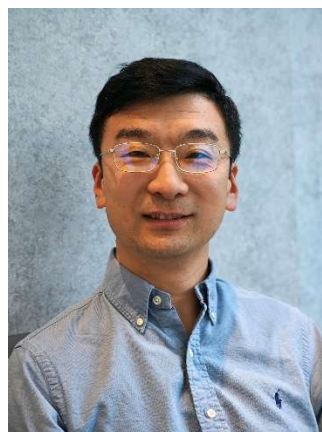
With also over 7 years at the CLS, Arash Panahifar left BMIT in June of 2025 to enter a new chapter of his career in a similar role outside the CLS. Arash worked as a Scientist at BMIT with outstanding support for medical imaging projects. Of the various projects he has worked on, his contributions to improving the understanding of how human joints function and early diagnosis and discovery of the etiology of musculoskeletal diseases has helped to improve the many imaging techniques at BMIT.



Current Members

Ning Zhu – Scientist / Beamline Responsible

Transitioning into a new role, Dr. Ning Zhu has assumed the role of Beamline Responsible for BMIT as of September 2025. While still a Scientist, Ning will continue to work with users on a variety of projects while acting as the Beamline Responsible, helping to generate high quality data for users both old and new. His research group has helped to develop multiple methods to improve imaging at the beamline, from deep learning models to propagation-based imaging helical CT that produce high image quality while suppressing radiation noise.



Adam Webb - Scientist

Someone you are also already familiar with is Scientist Dr. Adam Webb. Adam has played a large role in working on end-station software, rigorously testing machines and software to ensure that users can plan their beamtime knowing that equipment and programs alike will make their experiments run as easily as possible. Recently, he has been working on the new stage systems and software, making sure that the machines that control our motors run smoothly. Adam continues to exemplify support for users and makes outstanding contributions to the success of our users' research.



Omar Marinos – Associate Scientist

Another individual who has transitioned into a new role is Omar Marinos, who has been working as an Associate Scientist with the BMIT team since May of 2024. You may have seen Omar around before, as he has previously worked as both a Technical Assistant and Support Scientist at the CLS since 2018. He has Designed and implemented equipment for Biomedical research purposes using computational simulations tools, including ANSYS, Fluent, FLUKA, and Python. Omar is currently working on his PhD in Biomedical Engineering, working with Dr. Dean Chapman on bent Laue crystal monochromators as part of his research.



Carter Blocka – (New) Associate Scientist

New to the BMIT team, Carter Blocka joined us as of September 2025 as a new Associate Scientist. Carter has been working as a user at BMIT with over five years of experience in writing proposals, designing experiments, leading teams, and performing image processing and analysis that has led to several publications as both a primary and co-author. He has also recently completed his MSc in Chemical Engineering, expanding on some of the dynamic work that he has helped with over the years covering granule processing and drying for various materials using synchrotron X-ray imaging, and was recently awarded the G. Michael Bancroft 2024 Masters Thesis award.



Xiao Fan Ding – (New) Associate Scientist

We also welcome Xiao Fan Ding to the BMIT team as a new Associate Scientist as of September 2025. Having published and co-authored several peer-reviewed journal articles in addition to having won multiple awards for his research, Xiao Fan has over eight years of experience in imaging and interdisciplinary research collaborations where he has applied advanced image processing and analysis techniques. Xiao Fan is currently completing his PhD in Biomedical Engineering covering the development of post image processing analysis strategies and how these can be applied to synchrotron based hard X-ray CT.



We hope that you will join us in congratulating the former team members on entering a new chapter in their careers, as well as welcoming the current team to many more years of scientific collaboration and excellence together. The updated contact info for the BMIT team can be found at:

<https://bmit.lightsource.ca/contact-us/>

Updates to the Beamlines

Once beam is able to be delivered to both the BM and ID beamlines, our primary objective is to make sure that all of the previous equipment and techniques that were in place at BMIT before we went dark will continue to work as they have before. Whether this is one of our many PCO cameras or one of the many different lenses used to adjust magnification, it is our goal to ensure that experiments can still be performed for the various techniques at BMIT from common methods such as absorption contrast imaging to the less common K-edge subtraction.

Aside from the existing equipment and methods, we have some new and exciting tech info to share! One of the larger changes will be the implementation and upgrading of the sample stages in both the ID and BM end stations. These upgrades will allow for more precise movement of the stages, with better control of movement in X-Y, X-Z, and rotation. In addition to this, we will also be updating all BMIT computers to the latest versions of TOFU to allow users to reconstruct their data faster, while also changing over our operating systems to Debian 12 to provide long-term support in a secure and stable environment. Users may also be excited to see that a new detector in the form of a PCO Edge 10 bi is now available for use! This new detector possess' a max fps of 122 at full frame, with a pixel size of 4.6 μm and a resolution of 4416 x 2368 pixels. This new detector will be a great addition to our existing detector pool, and will find use with all of our detectors for acquisition methods such as computed tomography, helical acquisition, and computed laminography (read more about our acquisition modes at <https://bmit.lightsource.ca/tech-info/acquisition-modes/>). For one last big upgrade that we have in the works, the ventilation of the BMIT labs are planned to be upgraded to be able to host live animals longer. Our current capacity only allows live animals to stay in the labs for a maximum of 12 hours. With these upgrades, we will be able to host animals for at least 24 hours once the project is finalized and everything is installed.

CLS User Community Forum

While we are still facing some of the challenges of limited operations, the CLS will be hosting a User Community Forum to connect with users, staff, and partners to discuss the facility's status, future planning, and the science that continues to thrive across our community. For more information regarding the CLS User Community Forum and to register, please visit:

<https://event.fourwaves.com/cls-user-community-forum/pages>

Activities at the Beamlines

In 2024, we saw the 500th publication based on the data collected at the BMIT beamlines! 66% are journal articles, 20% are Doctoral and Masters' theses, 12% are peer-reviewed conference proceedings, with the remainder being books, chapters, and magazine articles. As of Fall 2025, the BMIT beamlines currently have a total of 553 publications. We are proud of our users' research, and we look forward to seeing what else you have in store in the future!

Expressions of Interest

As the Call for Proposals for Cycle 41 is still delayed until reliable beam can be delivered to the beamlines and normal operations return, the User Services Office will be calling for Expressions of Interest as early as October 8th 2025 to reach out to users and begin allocating owed beamtime once we are confident that we can return to normal operations. The User Community Forum will be a great time to ask any questions and discuss the facility's status as well as any future planning once the Expressions of Interest goes out to our users. For the latest news and updates regarding the path to beam from facilities please refer to:

<https://www.lightsource.ca/facilities/newlinac.php>

Around the Beamlines

Researchers from the University of Saskatchewan used BMIT to study fungal diseases such as Fusarium head blight in wheat spikes. Infected kernels show morphological changes and are often contaminated with deoxynivalenol. Their goal is to use synchrotron CT imaging as a more rapid and advanced tool to improve the accuracy of measurements for key morphological indicators of Fusarium infection.

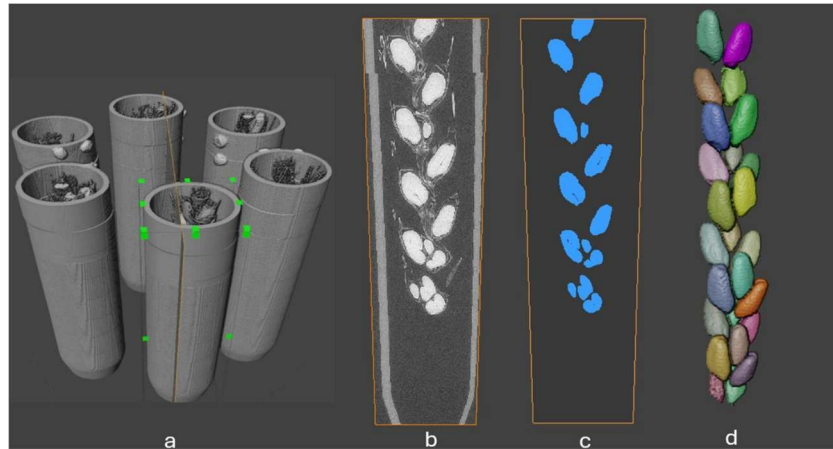


Figure. Example of CT scanning and image processing pipeline for wheat spikes (supplied by Sheila Pereira de Andrade, University of Saskatchewan).

BMIT User Data Back-up Policy

BMIT's data retention policy has changed to better conserve and utilize the amount of storage that we can provide for users in a faster and more efficient manner. Recently, the CLS has setup a new server using Globus to better link users to projects that they are affiliated with and can now access their data directly, eliminating the need to perform mass copying of projects when users need to retrieve their data. Users can find a personal download for Globus at <https://www.globus.org/globus-connect-personal>, and once setup, will receive an email from the Globus server to access their data.

While we previously retained data for up to 1 year (and in some instances kept a back-up copy for 2 years), the new data policy is that any files created by users in their “rec” folders will only be retained for 90 days after they are generated. Please note that at no point will we back-up reconstructed and processed data - this is the sole responsibility of the research groups. For large data sets and “raw” files, we will still retain these for a period of 2 cycles or 1 year plus the current cycle. At the end of this retention period, data will be evaluated for its ongoing value and relevance. If data is deemed no longer necessary, it will be securely disposed of following data sanitization procedures. If you require a copy of your data, please contact the BMIT scientist that helped you with your experiment.

Pictures of the Season

In Situ Analysis of Vascular Structures in Fractured Tyrannosaurus Rex Rib

Contact Information: Jerit L. Mitchell, University of Regina

Reference: Mitchell, J. L., Barbi, M., McKellar, R. C., Cliveti, M., & Coulson, I. M. (2025). In situ analysis of vascular structures in fractured Tyrannosaurus rex rib. Scientific Reports, 15(1), Article 20327. <https://doi.org/10.1038/s41598-025-06981-z>

Soft tissue preservation in fossils has become a popular focus of paleontology research due to easier access to sensitive probes like synchrotron radiation, allowing more detailed analysis of specimens. Although uncommon, reports exist on vascular preservation in dinosaurs, generally as remnants of Haversian canals. However, combined 3D morphological and chemical analysis of large angiogenic dinosaur blood vessels has not been reported before. Here we show characterization of a network of large vessel-like structures in a rib from “RSKM P2523.8” (Royal Saskatchewan Museum), an exceptionally robust Tyrannosaurus rex found in the Late Cretaceous Frenchman Formation, Saskatchewan, Canada. Using Synchrotron Micro-Computed Tomography these structures can be visualized in situ within the bone and matched to chemical microprobing from Synchrotron X-ray Fluorescence and X-ray Absorption Near Edge Structure. Combined with conventional optical and electron microscopy, we show the vessel-like structures are composed of pyrite partially oxidized to goethite or hematite, preserved in two distinct layers as permineralized casts. Although no original soft tissues were able to be recovered using the current suite of techniques, the structures’ morphology and sole presence in a fractured area of the rib suggest angiogenic origin. Bone healing and regrowth may offer a promising target for future multi-technique soft tissue experiments analyzing dinosaur healing potential.

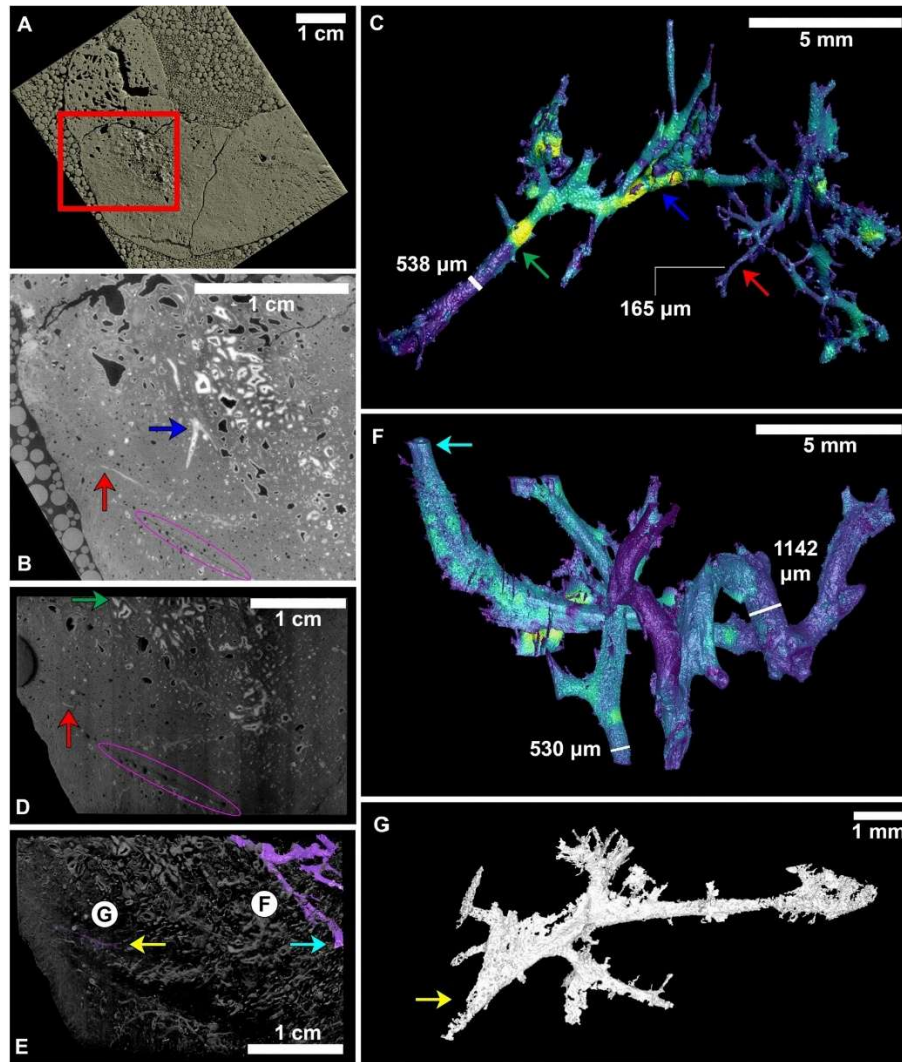


Figure. In situ SR-CT analysis of vessel-like structures in pathogenic rib of RSKM P2523.8 at BMIT-ID beamline. (A–C) Original CT scan as shown in Fig. 1A. (A) 3D threshold rendering of the exterior of the cross sectional scan. The location of the found vascular-type structures is given by the red box. Glass beads seen outside of the sample are part of the photon homogenization technique used. (B) A single tomographic slice, zooming into the box of (A), taken from the middle of the cross section. A notable high density structure arises (tunnel-like bright pixels). The magenta oval indicates the line separating the normal bone from the callus bone. (C) 3D thickness mesh rendering of the high density structure represented by (B). Brighter areas are mineralized, while darker areas are more hollow. The red and blue arrows of (B) and (C) show corresponding points in 2D and 3D visualization. (D–G) Second CT scan as shown in Fig. 1C. (D) 3D threshold render of the second scan, showing the exposed surface. The red arrow here indicates the specific location of the structure that was probed for subsequent chemical analysis, which is the same location as the first CT scan (B, C). The part of the vessel corresponding to the green arrow of (C) has been exposed here.

(E) 3D threshold render with removal of lower density voxels to show location of more found vascular-type structures. (F) 3D thickness mesh of a larger tubular structure found closer to the center of the bone, with corresponding cyan arrow from (E). (G) 3D mesh render of a structure similar in morphology to the first CT scan (C), with corresponding yellow arrow from (E).

A Comprehensive Assessment of Microscopic Characterization Techniques to Accurately Determine the Particle Size Distribution of Roller-Milled Yellow Pea Flours

Contact Information: Jitendra Paliwal, University of Manitoba

Reference: Sivakumar, C., Nadimi, M., Stobbs, J. A., Karunakaran, C., & Paliwal, J. (2024). A comprehensive assessment of microscopic characterization techniques to accurately determine the particle size distribution of roller-milled yellow pea flours. *Powder Technology*, 434, Article 119374.

<https://doi.org/10.1016/j.powtec.2024.119374>

The particle size of milled ingredients influences the quality and texture of manufactured foods. However, the limited understanding of how milling influences particle size distribution (PSD) of pulse flours, has hindered the incorporation of pulses in food formulations. This first-of-its-kind study delves into PSD examination of roller-milled yellow pea flour streams and blends, employing laser diffraction (LD), scanning electron microscopy (SEM), and synchrotron-based X-ray microcomputed tomography (SR- μ CT). LD analysis revealed a multimodal distribution pattern across particle sizes ranging from 3 to 1300 μ m. SEM confirmed particle size variations among flour streams and blends. Synchrotron X-rays, known for their high intensity, brightness, and tunable energy, provided seminal insights into complex flour structures. Employing SR- μ CT, the 3D volumetric particle size distribution yielded more accurate particle size and shape computations than established techniques. This pulse flour characterization will enable food manufacturers to utilize nutrient-dense pulse ingredients to address the growing market demand for health-conscious products.

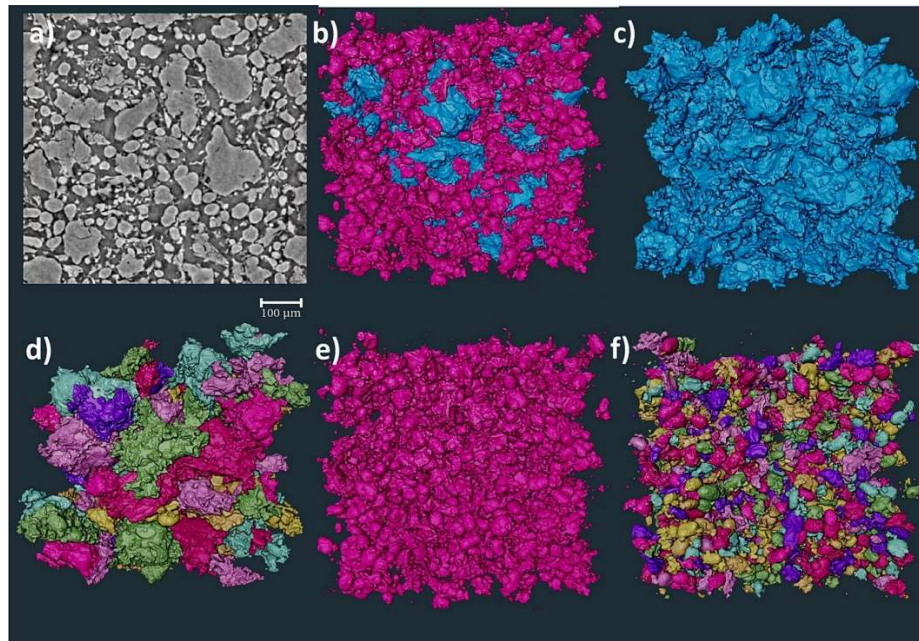


Figure. SR- μ CT data analysis of M4 flour sample a) gray-level image b) 3D image of starch protein matrices (SPM) as shown in blue and starch granules as shown in pink c) 3D image of SPM d) 3D image of individual SPMs as shown in different colors e) 3D image of starch granule f) 3D image of individual starch granules as shown in different colors.

Synchrotron Micro-Computed Tomography Unveils the Three-Dimensional Structure and Origin of Staminodes in the Plains Prickly Pear Cactus *Opuntia Polyacantha* Haw. (Cactaceae)

Contact Information: J. Hugo Cota-Sánchez, University of Saskatchewan

Reference: Cota-Sánchez, J. H., Falconer, D. J., de Almeida, O. J. G., Stobbs, J. A., Vera-Vélez, R., Rice, R. S., & Belliveau, N. A. (2023). Synchrotron micro-computed tomography unveils the three-dimensional structure and origin of staminodes in the Plains Prickly Pear Cactus *Opuntia polyacantha* Haw. (Cactaceae): Synchrotron micro-computed tomography unveils the three-dimensional structure and origin of staminodes in the Plains Prickly Pear Cactus *Opuntia polyacantha* Haw. (Cactaceae). *Protoplasma*, 260(5), 1303–1312. <https://doi.org/10.1007/s00709-023-01846-6>

Floral appendages display an array of shapes and sizes. Among these organs, staminodes are morphologically diverse structures that have lost the ability to produce pollen, but in some instances, they produce fertile pollen grains. In the family Cactaceae staminodes are uncommon and range from simple linear to flat to spatulate structures, but studies describing their structural attributes are scanty. This study highlights the advantages of synchrotron radiation for sample preparation and as a research tool for plant biology. It describes the internal morphology of floral parts, particularly stamen,

tepals, and staminodes in the Plains Prickly Pear Cactus, *Opuntia polyacantha*, using synchrotron radiation micro-computed tomography (SR- μ CT). It also shows the different anatomical features in reconstructed three-dimensional imaging of reproductive parts and discuss the advantages of the segmentation method to detect and characterize the configuration and intricate patterns of vascular networks and associated structures of tepal and androecial parts applying SR- μ CT. This powerful technology led to substantial improvements in terms of resolution allowing a more comprehensive understanding of the anatomical organization underlying the vasculature of floral parts and inception of staminodes in *O. polyacantha*. Tepal and androecial parts have uniseriate epidermis enclosing loose mesophyll with mucilage secretory ducts, lumen, and scattered vascular bundles. Cryptic underlying structural attributes provide evidence of a vascularized pseudo-anther conjoint with tepals. The undefined contours of staminodial appendages (pseudo-anther) amalgamated to the tepals' blurred boundaries suggest that staminodes originate from tepals, a developmental pattern supporting the fading border model of floral organ identity for angiosperms.

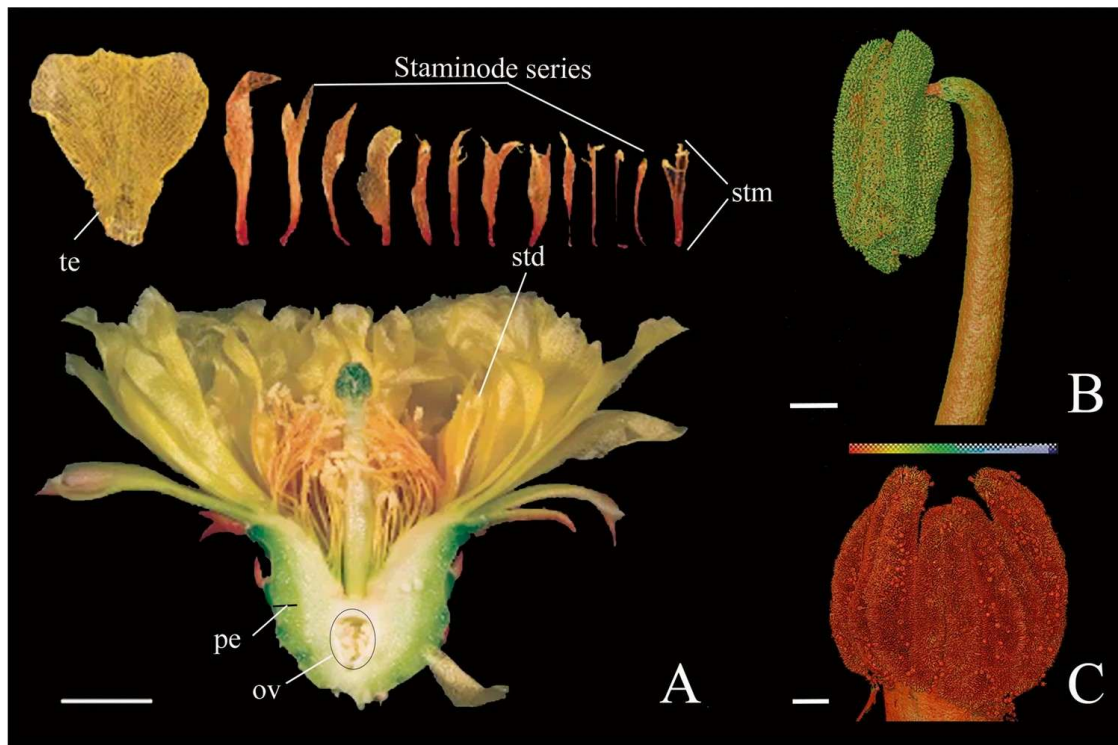


Figure. Floral attributes in *Opuntia polyacantha*. (A) Staminal flower of *O. polyacantha* with staminode series (upper panel). (B) Micro-CT volume rendering of the upper region of stamen. (C) Micro-CT volume rendering of the stigma showing papillate lobes with pollen grains attached. pe: pericarpel; std: staminode; stm: stamen; t: tepal; ov: ovary. Scale bar in A = 1 cm. Scale bar in B and C = 0.5 mm.

New Publications

Publications are an important factor in our funding and taken into consideration by the peer review committee. Users are encouraged to add their publications to the CLS database. Please review the publications list and ensure that all of your publications are included:

<http://bmit.lightsource.ca/publications>

To add new or missing publications to the CLS database use the CLS User Portal System:

<https://user-portal.lightsource.ca>

After you log in, click on 'Publications', then 'All Publications', then simply click on the **green + icon** in the top right corner to add your publication. Papers are easily added using the DOI.

Acknowledgements

All Users and CLS Staff are required to acknowledge the work they performed, in whole or in part, at the Canadian Light Source. Authors are requested to include the following Acknowledgement when submitting or presenting results from the CLS:

“Part or all of the research described in this paper was performed at the Canadian Light Source, a national research facility of the University of Saskatchewan, which is supported by the Canada Foundation for Innovation (CFI), the Natural Sciences and Engineering Research Council (NSERC), the National Research Council (NRC), the Canadian Institutes of Health Research (CIHR), the Government of Saskatchewan, and the University of Saskatchewan.”

Acknowledgement of any beamline staff who may have assisted in optimization and preparation of the experimental setup as well as data acquisition or data processing is very welcomed.

Moreover, if users would like to refer to technical specifications of BMIT beamlines, they may cite the following articles:

- To refer to technical specifications of the BMIT-BM beamline (i.e., 05B1-1 POE-2 endstation):

[Wysocki, T. Chapman, D. Adams, G., Renier, M. Suortti, P. Thomlinson, W. Beamlines of the biomedical imaging and therapy facility at the Canadian Light Source Part 1. Nuclear Instruments and Methods in Physics Research A, vol. 582, iss. 1 pp. 73-76, 2007.](#)

- To refer to technical specifications of the BMIT-ID beamline (i.e., 05ID2 SOE-1 endstation):

[Wysokinski, T. Chapman, D. Adams, G., Renier, M. Suortti, P. Thomlinson, W. Beamlines of the biomedical imaging and therapy facility at the Canadian Light Source Part 3. Nuclear Instruments and Methods in Physics Research A, vol. 775, iss. 1 pp. 1-4, 2015.](#)

- To cite the UFO-KIT reconstruction software you may cite:

[Vogelgesang, M.; Farago, T.; Morgeneyer, T. F.; Helfen, L.; dos Santos Rolo, T.; Myagotin, A.; Baumbach, T. Real-time image-content-based beamline control for smart 4D X-ray imaging. Journal of synchrotron radiation, Vol. 23, iss. 5, pp. 1254-1263. 2016.](#)

Reported Publications using BMIT Beamlines – January to September 2025

1. Ashe, Paula; Tu, Kaiyang; Stobbs, Jarvis A.; Dynes, James J.; Vu, Miranda et al. (2025). *Applications of synchrotron light in seed research: an array of x-ray and infrared imaging methodologies*. Frontiers in Plant Science 15. [10.3389/fpls.2024.1395952](#).
2. Bond, Toby; Gasilov, Sergey; Dressler, Reid; Petibon, Remi; Hy, Sunny et al. (2025). *Operando 3D Imaging of Electrolyte Motion in Cylindrical Li-Ion Cells*. Journal of the Electrochemical Society . [10.1149/1945-7111/adba8f](#).
3. Chadwick, Eric A.; Shrestha, Pranay; Parmar, Harsharaj B.; Bazylak, Aimy; Schulz, Volker P. et al. (2025). *Biomimetic auxiliary channels enhance oxygen delivery and water removal in polymer electrolyte membrane fuel cells*. Applied Energy 389, 125760. [10.1016/j.apenergy.2025.125760](#).
4. Chen, Joseph M.; Lin, Vincent Y. W.; Le, Trung N.; Spiegel, Jennifer L.; Ungar, Omer J. et al. (2025). *Synchrotron-Based Trauma Assessment of Robotic Electrode Insertions in Cochlear Implantation*. Laryngoscope . [10.1002/lary.32254](#).
5. Chen, Yinshan; Baviriseaty, Sruthika; Thool, Prajwal; Gautreau, Jonah; Yawman, Phillip D. et al. (2025). *Quantitative Structural and Compositional Elucidation of Real-World Pharmaceutical Tablet Using Large Field-of-View, Correlative Microscopy-Tomography Techniques and AI-Enabled Image Analysis*. Pharmaceutical Research 42(1) , 203-217. [10.1007/s11095-024-03812-0](#).
6. Chen, Yinshan; Baviriseaty, Sruthika; Thool, Prajwal; Zhu, Aiden; Sluga, Kellie et al. (2025). *Quantitative elucidation of the effect of ordered mixing in pharmaceutical tablets using correlative microscopy-tomography techniques and AI-enabled image analysis*. Journal of Pharmaceutical Sciences , 103955. [10.1016/j.xphs.2025.103955](#).

7. Czapalay, Elyse S.; Dobson, Stacie; Marangoni, Alejandro G. (2025). *Legume starch and flour-based emulsion gels as adipose tissue mimetics in plant-based meat products*. Future Foods 11, 100578. [10.1016/j.fufo.2025.100578](https://doi.org/10.1016/j.fufo.2025.100578).
8. Czapalay, Elyse S.; Soleimanian, Yasamin; Stobbs, Jarvis A.; Marangoni, Alejandro G. (2025). *Plant tissue-based scaffolds filled with oil function as adipose tissue mimetics*. Current Research in Food Science 10, 101002. [10.1016/j.crfs.2025.101002](https://doi.org/10.1016/j.crfs.2025.101002).
9. Dahlan, Nuraina Anisa; Chiok, Kim Lam R.; Tabil, Xavier L.; Duan, Xiaoman; Banerjee, Arinjay et al. (2025). *Development and characterization of a decellularized lung ECM-based bioink for bioprinting and fabricating a lung model*. Biomaterials Advances 177, 214428. [10.1016/j.bioadv.2025.214428](https://doi.org/10.1016/j.bioadv.2025.214428).
10. Daneshamouz, Sana; Saadati, Shaghayegh; Zhu, Sishi; Kalugin, Denis; Shoker, Ahmed et al. (2025). *Investigation on the Detoxification of Indoxyl Sulfate (IS) and Indole-3-Acetic Acid (IAA) Protein-Bound Uremic Toxins (PBUTs) Using Trametes versicolor Biocompatible Laccase: In Situ Synchrotron Imaging, Experimental and Computational Studies*. Applied Biochemistry and Biotechnology . [10.1007/s12010-025-05235-y](https://doi.org/10.1007/s12010-025-05235-y).
11. Ding, Xiao Fan; Duan, Xiaoman; Li, Naitao; Khoz, Zahra; Wu, Fang-Xiang et al. (2025). *Development of a deep learning method for phase retrieval image enhancement in phase contrast microcomputed tomography*. Journal of Microscopy . [10.1111/jmi.13419](https://doi.org/10.1111/jmi.13419).
12. Dobson, S.; Marangoni, A.G. (2025). *Exploration of structural differences between dairy and plant-based cheese*. Food Structure 44, 100424. [10.1016/j.foostr.2025.100424](https://doi.org/10.1016/j.foostr.2025.100424).
13. Dobson, S.; Marangoni, A.G. (2025). *Evaluating the effect of plant protein functionalities on the performance of high-protein plant-based cheese*. Food Chemistry 492, 145553. [10.1016/j.foodchem.2025.145553](https://doi.org/10.1016/j.foodchem.2025.145553).
14. Duan, Xiaoman; Fan Ding, Xiao; Khoz, Samira; Chen, Xiongbiao; Zhu, Ning et al. (2025). *Development of A deep Learning-based algorithm for High-Pitch helical computed tomography imaging*. Expert Systems with Applications 262, 125663. [10.1016/j.eswa.2024.125663](https://doi.org/10.1016/j.eswa.2024.125663).
15. EGAN, BEN M.J.; LOEWEN, ELYSSA; MCKELLAR, RYAN C. (2025). *The first fossils of Alloraphes (Coleoptera: Staphylinidae: Scydmaeninae) described from Miocene Dominican amber*. Zootaxa 5679(1) , 113-122. [10.11646/zootaxa.5679.1.6](https://doi.org/10.11646/zootaxa.5679.1.6).
16. Gill, Jujhar Singh; Dhaliwal, Sharandeep Singh; Brar, gurcharn; Stobbs, Jarvis; Bond, Toby et al. (2025). *Silver nitrate (AgNO₃) as an alternative contrast agent for X-ray imaging of wheat tissue samples*. Canadian Journal of Plant Science . [10.1139/cjps-2025-0003](https://doi.org/10.1139/cjps-2025-0003).
17. Indore, Navnath S.; Jayas, Digvir S.; Karunakaran, Chithra; Stobbs, Jarvis; Bondici, Viorica F. et al. (2025). *Application of synchrotron imaging techniques for study of changes in microstructural and nutritional properties of different wheat classes in storage*. Journal of Stored Products Research 111, 102576. [10.1016/j.jspr.2025.102576](https://doi.org/10.1016/j.jspr.2025.102576).

18. Jack, Tonye Alaso; Webb, M. Adam; Rahman, K.M. Mostafijur; Fazeli, Fateh; Szpunar, Jerzy et al. (2025). *Hydrogen uptake and embrittlement behavior in pipeline steels: Insights from slow strain rate testing and synchrotron micro-CT imaging*. Engineering Failure Analysis 172, 109419. [10.1016/j.engfailanal.2025.109419](https://doi.org/10.1016/j.engfailanal.2025.109419).
19. Li, Hao; Staxäng, Karin; Agrawal, Sumit; Ladak, Hanif M.; Rask-Andersen, Helge et al. (2025). *The Multifaceted Human Round Window Anatomical Aspects and Clinical Relevance*. Otology and Neurotology 46(8) , 984-990. [10.1097/mao.0000000000004560](https://doi.org/10.1097/mao.0000000000004560).
20. Li, Naitao; Duan, Xiaoman; Ding, Xiao Fan; Zhu, Ning; Chen, Xiongbiao et al. (2025). *Characterization of hydrogel-scaffold mechanical properties and microstructure by using synchrotron propagation-based imaging*. Journal of the Mechanical Behavior of Biomedical Materials 163, 106844. [10.1016/j.jmbbm.2024.106844](https://doi.org/10.1016/j.jmbbm.2024.106844).
21. Ma, Qianyi; Chen, Anna; Fowler, Michael (2025). *Dual-Doped Graphene Quantum Dots to Promote Long-Life Aqueous Zn-ion Batteries*. Carbon Energy . [10.1002/cey2.694](https://doi.org/10.1002/cey2.694).
22. Marcozzi, Tatiana; Baviriseaty, Sruthika; Yawman, Phillip; Zhang, Shawn; Vervaet, Chris et al. (2025). *Synchrotron computed tomography combined with AI-based image analysis for the advanced characterization of spray dried amorphous solid dispersion particles*. Journal of Pharmaceutical Sciences 114(1) , 530-543. [10.1016/j.xphs.2024.10.033](https://doi.org/10.1016/j.xphs.2024.10.033).
23. Mitchell, Jerit L.; Barbi, Mauricio; McKellar, Ryan C.; Cliveti, Monica; Coulson, Ian M. et al. (2025). *In situ analysis of vascular structures in fractured Tyrannosaurus rex rib*. Scientific Reports 15(1) . [10.1038/s41598-025-06981-z](https://doi.org/10.1038/s41598-025-06981-z).
24. Moirangthem, Tolen Tombung; Oke, Adedayo B.; Stobbs, Jarvis; Nickerson, Micheal; Baik, Oon-Doo et al. (2025). *Experimental and computational study of synchrotron X-ray micro-computed tomography imaging in peas and pinto beans after radiofrequency heating*. Innovative Food Science and Emerging Technologies 102, 104033. [10.1016/j.ifset.2025.104033](https://doi.org/10.1016/j.ifset.2025.104033).
25. Movasaghi, Mina; Heydari, Mohamad Mehdi; Schwean-Lardner, Karen; Kirychuk, Shelley; Thompson, Brooke et al. (2025). *Investigating cold plasma jet effectiveness for eggshell surface decontamination*. Food Control 168, 110928. [10.1016/j.foodcont.2024.110928](https://doi.org/10.1016/j.foodcont.2024.110928).
26. Mundboth, Kiran (2025). *Canadian Light Source – 20 Years of Discovery*. Canadian Journal of Chemistry . [10.1139/cjc-2024-0278](https://doi.org/10.1139/cjc-2024-0278).
27. Njeru, Harriet K.; Knudsen, Knud E. Bach; Stobbs, Jarvis A.; Tu, Kaiyang; Woyengo, Tofuko A. et al. (2025). *Porcine in vitro digestion and matrix structure of undigested residue of xylanase- and cellulase-supplemented maize and wheat*. Journal of the Science of Food and Agriculture . [10.1002/jsfa.14179](https://doi.org/10.1002/jsfa.14179).
28. Panahi-Sarmad, Mahyar; Ghaffarkhah, Ahmadreza; Bauman, Lukas Alexander; Babaei-Ghazvini, Amin; Hashemi, Seyyed Alireza et al. (2025). *Liquid Printing in Nanochitin Suspensions: Interfacial Nanoparticle Assembly Toward Volumetric Elements, Organic Electronics and Core–Shell Filaments*. Small Methods . [10.1002/smtd.202500100](https://doi.org/10.1002/smtd.202500100).

29. Parekh, Dhruvi; Ranieri, Salvatore; Seip, Tess; Chadwick, Eric A.; Derebaşı, Beste et al. (2025). *Dominating impact of microporous layer thickness on gas diffusion layer oxygen transport resistance*. Journal of Power Sources 656, 238031. [10.1016/j.jpowsour.2025.238031](https://doi.org/10.1016/j.jpowsour.2025.238031).
30. Patel, Ravi; Stobbs, Jarvis; Acharya, Bishnu (2025). *Study of biochar in cementitious materials for developing green concrete composites*. Scientific Reports 15(1) . [10.1038/s41598-025-07210-3](https://doi.org/10.1038/s41598-025-07210-3).
31. Rahemtulla, Aly; King, Graham; Gomez, Ariel; Appathurai, Narayan; Leontowich, Adam F. G. et al. (2025). *The High Energy diffraction beamline at the Canadian Light Source*. Journal of Synchrotron Radiation 32(3) . [10.1107/s1600577525001262](https://doi.org/10.1107/s1600577525001262).
32. Sanders, Cameryn; Stobbs, Jarvis A.; Dobson, Stacie; Marangoni, Alejandro G. (2025). *Impact of protein sources on the functionality of plant-based cheeses formulated with saturated and unsaturated fat*. Physics of Fluids 37(1) , 011913. [10.1063/5.0238556](https://doi.org/10.1063/5.0238556).
33. Stobbs, Jarvis A.; Ghazani, Saeed M.; Donnelly, Mary-Ellen; Marangoni, Alejandro G. (2025). *Chocolate Tempering: A Perspective*. Crystal Growth and Design . [10.1021/acs.cgd.5c00269](https://doi.org/10.1021/acs.cgd.5c00269).
34. Stobbs, Jarvis A.; Ghazani, Saeed M.; Tu, Kaiyang; Pensini, Erica; Fameau, Anne-Laure et al. (2025). *Dimyristoylphosphoethanolamine Addition During Chocolate Manufacture Promotes Proper Tempering under Simple Cooling Conditions without Shear*. Crystal Growth and Design 25(12) , 4621-4635. [10.1021/acs.cgd.5c00575](https://doi.org/10.1021/acs.cgd.5c00575).
35. Su, Han; Hu, Yang; Wang, Minkang; Zhong, Yu; Zhu, Jiaqi et al. (2025). *Localized Electrolyte Grain Engineering to Suppress Li Intrusion in All-Solid-State Batteries*. Advanced Materials . [10.1002/adma.202500673](https://doi.org/10.1002/adma.202500673).
36. Wen, Guobin; Ren, Bohua; Wang, Xin; Tan, Lichao; Dong, Silong et al. (2025). *Constructing a Localized Buffer Interlayer to Elevate High-Rate CO₂-to-C₂₊ Electrosynthesis*. Journal of the American Chemical Society 147(21) , 18110-18121. [10.1021/jacs.5c04129](https://doi.org/10.1021/jacs.5c04129).
37. Xu, Zhixiao; Li, Pengcheng; Zhao, Jianbao; Hu, Ke; Jia, Wenting et al. (2025). *A Universal Thick Anode for Aqueous and Seawater Energy Storage Devices*. Advanced Materials . [10.1002/adma.202416427](https://doi.org/10.1002/adma.202416427).
38. Xu, Zhixiao; Xu, Yunkai; Qiu, Yunkun; Cao, Yan; Gasilov, Sergey et al. (2025). *Pressurized organic electrodes enable practical and extreme batteries*. Nature Communications 16(1) . [10.1038/s41467-025-59892-y](https://doi.org/10.1038/s41467-025-59892-y).
39. Zhang, Hanyu; Xia, Liuyin; Zhu, Ning; Gasilov, Sergey; He, Iris et al. (2025). *Synchrotron X-ray imaging study on the mechanism of solids transfer to bitumen froth during oil sands flotation 1: True flotation*. Cleaner Engineering and Technology 25, 100894. [10.1016/j.clet.2025.100894](https://doi.org/10.1016/j.clet.2025.100894).
40. Zhang, Hanyu; Xia, Liuyin; Zhu, Ning; He, Iris (2025). *Synchrotron X-ray imaging study on the mechanism of solids transfer to bitumen froth during oil sands flotation 2: Water entrainment*. Cleaner Engineering and Technology 24, 101036. [10.1016/j.clet.2025.101036](https://doi.org/10.1016/j.clet.2025.101036).