

DISCOVERY
AT THE SPEED
OF LIGHT



MESSAGE FROM THE CHAIR OF THE BOARD

CONTENTS

- 2 Message from the Chair of the Board
- 3 Message from the Chief Executive Officer
- 4 How the Light Source Works
- 6 By the Numbers
- 8 Science Highlights
- 16 Financial Statements



This past year has been one of movement, away from pandemic restrictions toward robust facility operations, and to the next chapter of our story where we continue to play a significant role in this country's science, innovation and economic agendas.

As we begin the major linear accelerator upgrade, the Board is confident that our new Chief Executive Officer (CEO) Bill Matiko's leadership will secure our place in the

global synchrotron community while also growing our recognition as a national resource.

We had the opportunity earlier in the year to join leaders from nationally important research facilities in Canada to discuss strategic perspectives, expertise, and challenges we all face in the current funding environment. Together, led by the Government of Canada, we will work toward greater structure, predictability, and coherence in the funding of facilities that contribute so much to the advancement of science in Canada.

I was also pleased to be part of the joint Science Advisory and Machine Advisory meetings held in September 2022. It was an opportunity to engage with and to hear from global experts about how we can maintain and improve services and operations at the Canadian Light Source Inc. (CLS). Their international perspective is important to ensuring we remain at the forefront of synchrotron science at home and abroad.

Good progress has been made on actualizing the CLS strategic plan, which lays out the path forward for our operations over the next decade. As the plan unfolds, the entire board is focused on ensuring we are recognized as leaders in health, agriculture, environment, and advanced materials research in Canada and around the world.

None of what we've accomplished this year would have been possible without the ongoing support of our operating funding partners—the Canada Foundation for Innovation, the Natural Sciences and Engineering Research Council, the Canadian Institutes for Health Research, the Province of Saskatchewan, and the University of Saskatchewan. Thank you for your continued support.

I know I echo the entire Board of Directors when I extend our gratitude to all staff, who keep us moving forward by supporting our users and make sure the quality and integrity of the science CLS enables.

Pierre Lapointe Chair
Board of Directors

MESSAGE FROM THE CHIEF EXECUTIVE OFFICER



This year's annual report is a testament to our collective success emerging from the pandemic and returning to full, robust operations to support scientific discovery and innovation across a wide spectrum of scientific disciplines.

In my first term as Chief Executive Officer, I have appreciated the support of the Board of Directors, our executive and management team, and

all CLS staff for their commitment as we maintain and grow the CLS's reputation as one of Canada's leading scientific institutions.

Research in the area of materials science continues to dominate the work of our users, which is not surprising given the national and international focus in areas like battery efficiency and energy production. At the same time, we are playing a key role in health research, including vaccine development and the fight against cancer, agricultural innovations that will help feed the world, and significant improvements in environmental protection, as showcased in the Science Highlights section of this report.

This year alone we've welcomed and supported 1,299 distinct users—including more than 900 graduate students—from 37 academic institutions in 10 Canadian provinces, as well as researchers from 22 different countries around the world, evidence that we continue to put the CLS and Canada on the global synchrotron map.

Looking ahead, and guided by our 10-year strategic plan, the replacement of the linear accelerator (LINAC) will enhance our ability to deliver high-quality, stable light for researchers. This ambitious project will amplify the successes we have already achieved.

While we have accomplished so much, we know there are challenges ahead. But I am confident that together, as staff, users, funders, and stakeholders, we will continue to prove to Canada and the world that the CLS has earned, and will continue to hold, its rightful place in the realm of synchrotron science.

Bill Matiko
Chief Executive Officer

VISION

As a valued Canadian voice for innovation, our leadership and world-class talent achieve excellence in light source services and solutions.

MISSION

We enable science, learning, and socio-economic benefits through the provision of synchrotron light.

VALUES

SAFETY: We make safety paramount.

INNOVATION: We expand the boundaries of what is possible.

LEADERSHIP: We are leaders in light source applications, global science, and organizational excellence.

COLLABORATION: We enable collaboration among users, and sectors across academia, industry, and government.

EQUITY, DIVERSITY, AND INCLUSION: We are committed to equity, diversity, and inclusion.

ACCOUNTABILITY: We utilize resources responsibly and hold ourselves to the highest standards of ethics and integrity.

HOW THE LIGHT SOURCE WORKS

1

ELECTRON GUN

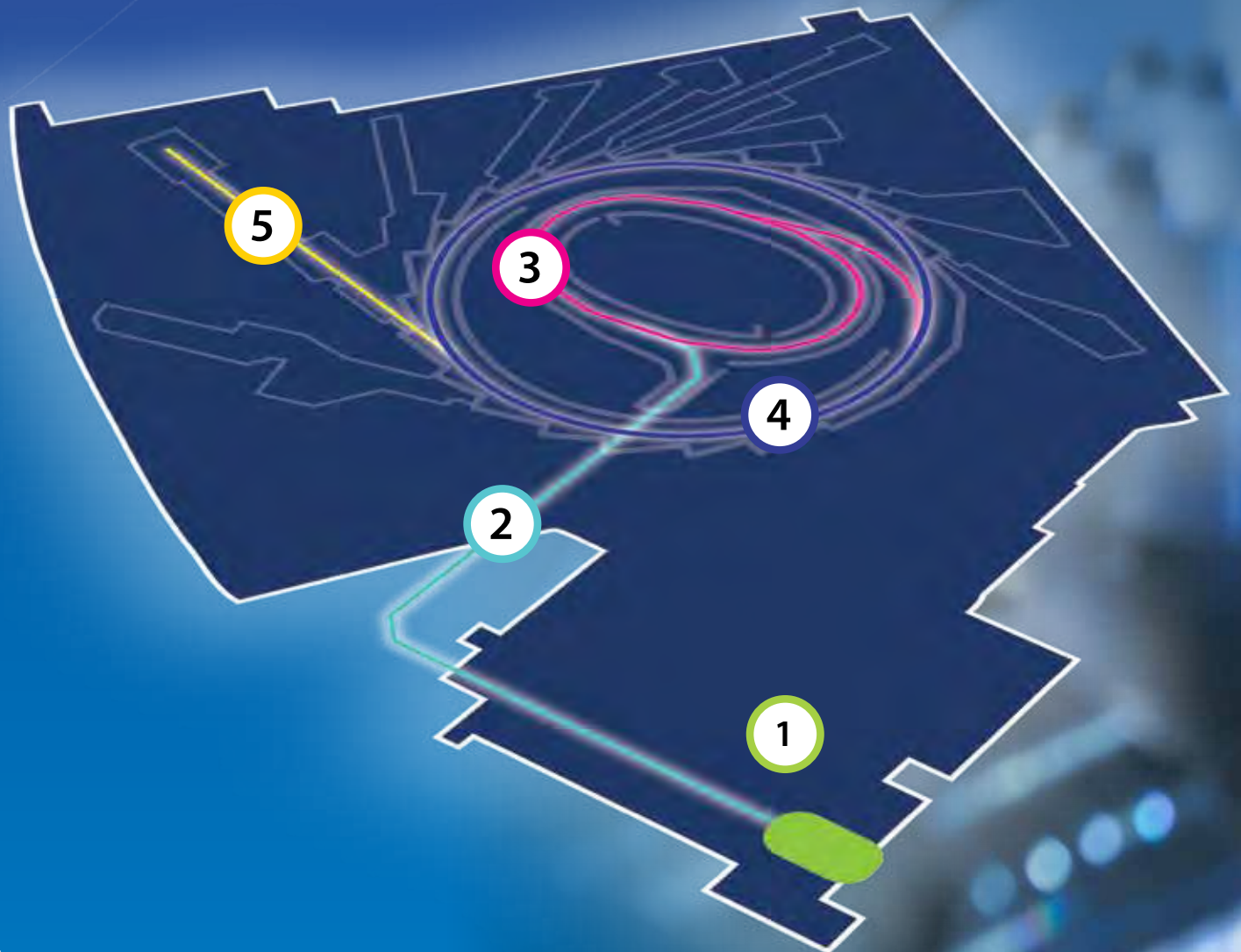
Bursts of electrons are injected into an ultra-high vacuum stainless steel tube.



2

LINEAR ACCELERATOR

Microwaves increase the speed of the electrons to 99.9998 per cent of the speed of light.



3

BOOSTER RING

In the ring, microwaves continue to accelerate the electrons; they travel around the ring 1.5 million times in 0.6 seconds.



4

STORAGE RING

Magnets bend the electron beam many times, producing a super bright light.



5

BEAMLINES

Beams of light are directed down the beamlines to experimental stations.



OUR YEAR
IN NUMBERS

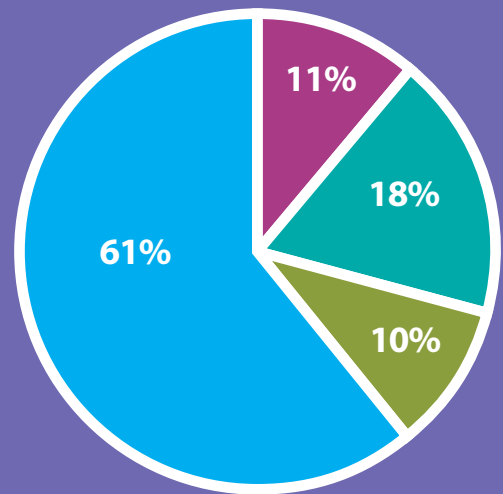
7,674
SHIFTS
DELIVERED



396
SCIENCE
PUBLICATIONS

**USERS FROM
22 COUNTRIES
AND
10 PROVINCES**

**USER
DISCIPLINES**



**SHIFTS
DELIVERED
BY STRATEGIC
AREA**

- Materials
- Health
- Environment
- Agriculture

USERS FROM



37 CANADIAN
ACADEMIC
INSTITUTIONS

GRAD
STUDENTS AND
POSTDOCTORAL
FELLOWS

925

1,300 DISTINCT
USERS

102

INTERNATIONAL
COLLABORATIONS

260 STAFF

900
BILLION
ELECTRONS



CIRCULATING
IN THE
STORAGE
RING



ELECTRONS IN THE BOOSTER
RING TRAVEL FAST ENOUGH
TO REACH THE MOON IN

1.3 SECONDS

SCIENCE HIGHLIGHTS

Protecting the health of Canadians

Blood-type conversion process now in pre-clinical trials

In 2019, University of British Columbia researchers identified a series of enzymes that could convert Type A blood into Type O blood, the universal donor type. The team used the CMCF beamline at the CLS to better understand how the enzymes cause this change both on the surface of red blood cells and on the surface of donated human organs. Avivo, a company launched to bring this technology to the marketplace, is now busy finetuning trials that could address blood and organ shortages in Canada and around the world.

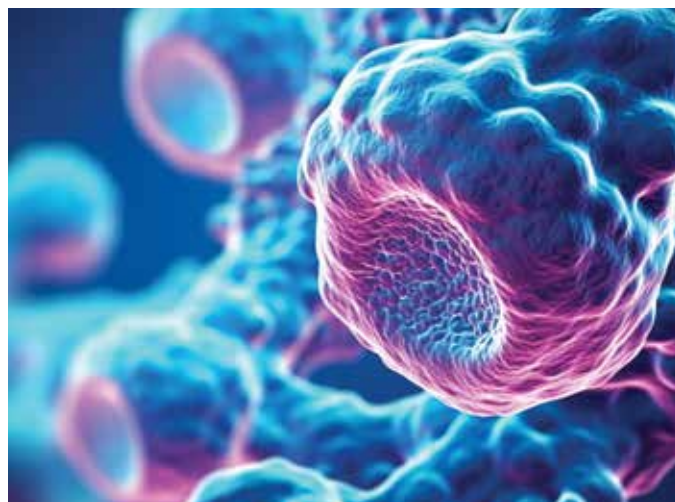
DOI:10.1038/s41564-019-0469-7



Attacking cancer cells from the inside out

Researchers from the University of Toronto are exploring proteases, enzymes that chew up old or misfolded proteins and act as cellular quality control. Using the CMCF beamline, they identified compounds that hyperactivate proteases, causing cell dysfunction and ultimately, cell death—creating a target for a new approach to cancer therapy.

DOI:10.1016/j.str.2022.12.002



New insights into a dynamic protein targeted in cancer therapy

A team of cancer researchers from Université de Montréal and the Institute of Cancer Research is using CLS technology to gain new insights into an enzyme target in cancer medicine. The enzyme PARP1 senses DNA damage and sends a cellular signal to carry out repair. The researchers captured a “snapshot” of PARP1 in the state it adopts after detecting damage, and are working on certain inhibitors that lock PARP1 onto DNA damage, paving the way for new cancer treatments.

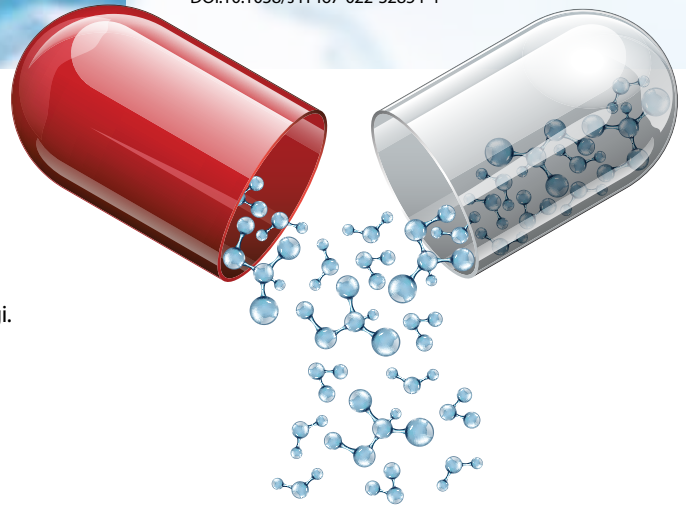
DOI:10.1016/j.j.molcel.2022.06.011



More effective COVID drug treatments with fewer side effects

Researchers from Simon Fraser University and the University of British Columbia used the CMCF beamline to study the structure and characteristics of one important viral protein that is a good target for antiviral drugs. Learning how to block the binding adaptability of an enzyme called the Main Protease (Mpro) could inform new, more effective antiviral treatments—including for COVID—with fewer side effects.

DOI:10.1038/s41467-022-32854-4



Tiny machines in bacteria could help make new medicines

McGill University researchers are working to understand nonribosomal peptide synthetases (NRPSs), tiny biological machines in bacteria and fungi. NRPSs are critical for creating therapeutic molecules found in a variety of medicines and understanding how they work will help with the design of new drugs and to overcome issues like antibiotic resistance.

DOI:10.1038/s41467-022-28221-y



Brain differences in men and women could affect post-stroke outcomes

University of Saskatchewan scientists looking at post-stroke differences in male and female mice found female mice have higher amounts of glycogen in their brains. Glycogen is a sugar-like substance that circulates in blood and nourishes cells. In humans, when the supply of glycogen is disrupted by stroke, women tend to have poorer outcomes than men. The research team's work suggests generalizing data for both sexes is problematic, as female metabolic markers are different.

DOI:10.1016/j.jbneur.2022.07.006

Advancing agricultural research

Developing vegan alternatives to meat and cheese

Researchers with the University of Guelph are working to develop sustainable, plant-based versions of foods such as meat and cheese. The group used the Mid-IR beamline to analyze the microstructure of their prototypes with the goal of creating plant-based foods that have a texture, look, and taste similar to the meat-based versions.



lightsource.ca



Finding more sustainable ways to cultivate rice crops

Rice farmers depend on phosphorous fertilizers to maximize yields, but there is a finite supply of the nutrient available to be mined. Using the CLS, researchers from Leibniz Centre for Agricultural Landscape Research (ZALF) examined soil samples from rice paddies and found silicon-based fertilizers can reduce the need for phosphorus in rice farming, making the industry more sustainable.

DOI:10.1038/s41598-022-20805-4

Inside cannabis flowers and chemistry

Cannabis sativa contains chemicals with medicinal, therapeutic, and psychoactive properties from which valued natural products are produced. In what is believed to be a world first, a National Research Council of Canada (NRC) scientist used synchrotron techniques to characterize the complex chemical mixtures that are organized on the flower surface in delicate glands, similar to those found on lavender, mint, and tomato. The goal of the work is to learn more about how structures in cannabis flowers are connected to the plant's complex chemistry, providing insight into its functioning.



@canlightsource



Cleaning contaminated water with flax shives

Researchers from the University of Saskatchewan have found that a common agriculture byproduct can treat wastewater contaminated by antibiotics and other pharmaceutical chemicals. The study demonstrated that flax shives treated with heat and steam can adsorb the medication carbamazepine from wastewater, creating a cheap and readily available option for wastewater treatment.

DOI:10.1016/j.cherd.2022.11.008



Peeling onions to help crops withstand drought and disease

University of Saskatchewan researchers are using CLS technology to help plants better withstand the stresses caused by climate change and disease. Using onions, the team can easily peel away a single layer of cells and see changes in the cell wall, the structure key to protecting against freezing, drought, and pathogens.

DOI:10.3390/plants11030385

How to store more carbon in soil during climate change

While the effects of temperature extremes are somewhat understood, moisture's impact on soil carbon is still unclear. A Cornell University-led group found that microbes in moist soils process organic inputs and store carbon better than in drier soils, opening the door for new management practices to help mitigate the impacts of climate change.

DOI:10.1016/j.gca.2022.04.028



Protecting the environment

Imaging Earth's crust reveals natural secret for reducing carbon emissions

Using the BMIT beamline, a University of Calgary researcher exploring the makeup of rock samples from the ocean floor, found much larger than expected pores, which may have implications for mitigating climate change. The rocks, which are also found in mountainous areas in British Columbia and Newfoundland, could potentially be used to sequester carbon.

DOI:10.1016/j.epsl.2023.118006



Bacteria could help capture greenhouse gases

Cyanobacteria use carbon to create essential nutrients that sustain their lifecycle. Researchers from Simon Fraser University examined the molecular structures in the bacteria and how CO₂ binds to a bacterial protein, looking for a way to leverage that system, along with industrial processes, to advance new strategies for carbon capture.

DOI:10.1038/s41589-022-01043-1



Using corals to study our oceans' past

Researchers from the U.S., Japan, and Canada used the CLS to develop a method for determining past ocean temperatures from cultured corals. The team found that the composition of potassium isotopes in cultured coral is influenced by seawater temperature, information that will allow extrapolation of temperature history in natural coral samples, and will inform future climate warming research.

DOI:10.1016/j.epsl.2022.117393



Pandemic reveals need for stricter glove disposal methods

A research team led by scientists from Concordia University used the CLS to study how disposable gloves break down in the environment. All the tested gloves released microparticles, organic matter, and heavy metals into water after weathering, and they hold their physical structure longer than disposable masks. The team's findings suggest stricter standards are needed for collection and disposal of single-use gloves.

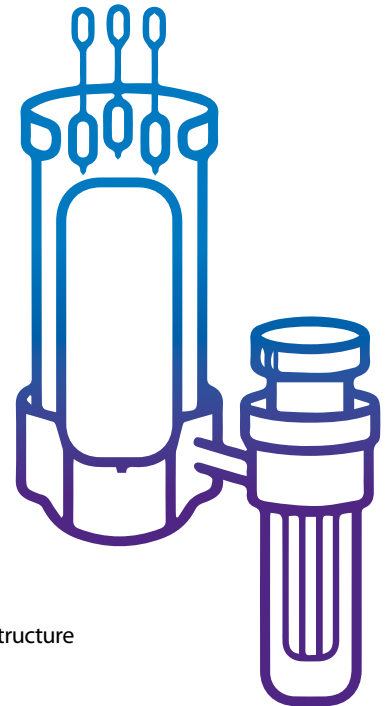
DOI:10.1016/j.scitotenv.2022.154986



Innovative fuels for Small Modular Reactors

Researchers from Canadian Nuclear Laboratories (CNL) and the University of Saskatchewan are using the CLS to explore how advanced nuclear fuels for small modular reactors (SMRs) could be used to help fill the gap between fossil fuels and renewables. The fuel combines uranium oxide with the naturally occurring element thorium in oxide form— understanding its structure is key to improving in-reactor performance.

DOI:10.1016/j.jnucmat.2022.154047



Transforming paper industry waste into useful products

Creating more useful products out of renewable resources like wood is the goal of University of British Columbia scientists who are studying an enzyme critical in transforming wood-derived compounds into useful chemicals. Using CLS technology, the team visualized and described the enzyme for the first time, and are hopeful its process could lead to new, eco-friendly biotechnologies.

DOI:10.1016/j.jbc.2022.101871

Creating next-generation materials

Better batteries for a better future

An international group of researchers has combined powerful imaging techniques and large datasets to better understand why lithium-ion batteries fail and how they can be improved. The team is working to identify in real time the flaws that occur, enabling them to measure the relationship between the battery's materials, its shape, and the internal chemical reactions.

DOI:10.1016/j.patter.2022.100634



Researchers identify new material for creating electronic devices

Finding a new material for one of the interior layers of light-emitting diodes could pave the way for more efficient and environmentally friendly production of digital display TV screens, computer monitors, and smartphones. University of Calgary researchers found that applying a vanadium oxide compound to the interior layers of diodes, can eliminate the standard but intense heat treatment required for other materials.

DOI:10.1021/acs.chemmater.2c03305

X-rays capture ageing process in EV batteries

CLS and Dalhousie University researchers used BMIT's 3D CT scans to help engineer powerful electric vehicle batteries with longer lifetimes. Their research shows how charge/discharge cycles damage batteries, pointing to a link between cracks and the depletion of vital liquids that carry charge.

DOI:10.1149/1945-7111/ac4b83





X-rays allow us to quickly develop high-strength steels

Accurately predicting the strength of novel steel prototypes based on microstructure and composition is critical in designing new types of steel. A research team led by University of Oulu scientists in Finland found that rapid and accurate synchrotron analyses could fast-track the design of high-strength steel, saving months compared to standard methods.

DOI:10.1016/j.jmrt.2022.07.066



Meeting high-tech industry's need for magnetic materials

University of British Columbia researchers have discovered a new material made of common elements that could make everyday electronics like cellphones cheaper and more environmentally friendly. The team used the REIXS beamline to quantify the material's magnetic properties, which are the backbone of many modern technologies.

DOI:10.1021/jacs.2c06768



Building better catalysts to close the carbon dioxide loop

One way to address climate change is to capture CO₂ emissions and convert them to other useful chemicals, a process that requires a catalyst, typically made of precious or base metals. Researchers from the University of Waterloo have developed a metal-free catalyst that is cheaper and more durable than metal ones, and is easy to fabricate.

DOI:10.1021/acscatal.2c03055

Financial Statements

CANADIAN LIGHT SOURCE INC.
March 31, 2023



Management's Responsibility

To the Member of Canadian Light Source Inc.:

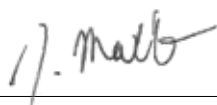
Management is responsible for the preparation and presentation of the accompanying financial statements, including responsibility for significant accounting judgments and estimates in accordance with Canadian accounting standards for not-for-profit organizations. This responsibility includes selecting appropriate accounting principles and methods, and making decisions affecting the measurement of transactions in which objective judgment is required.

In discharging its responsibilities for the integrity and fairness of the financial statements, management designs and maintains the necessary accounting systems and related internal controls to provide reasonable assurance that transactions are authorized, assets are safeguarded and financial records are properly maintained to provide reliable information for the preparation of financial statements.

The Board of Directors and Finance and Audit Committee are composed entirely of Directors who are neither management nor employees of the Organization. The Board is responsible for overseeing management in the performance of its financial reporting responsibilities, and for approving the financial information. The Finance and Audit Committee has the responsibility of meeting with management and external auditors to discuss the internal controls over the financial reporting process, auditing matters and financial reporting issues. The Finance and Audit Committee is also responsible for recommending the appointment of the Organization's external auditors.

MNP LLP is appointed by the Member to audit the financial statements and report directly to them; their report follows. The external auditors have full and free access to, and meet periodically and separately with, both the Finance and Audit Committee and management to discuss their audit findings.

June 21, 2023



Bill Matiko
Chief Executive Officer



Keith DeMong
Corporate Controller

To the Member of Canadian Light Source Inc.:

Opinion

We have audited the financial statements of Canadian Light Source Inc. (the "Organization"), which comprise the statement of financial position as at March 31, 2023, and the statements of operations, changes in member's surplus and cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Organization as at March 31, 2023, and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the Organization in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Organization's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Organization or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Organization's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

Independent Auditor's Report *(continued from previous page)*

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Organization's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Organization's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Organization to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Saskatoon, Saskatchewan

June 21, 2023

MNP LLP

Chartered Professional Accountants

MNP

Canadian Light Source Inc.
STATEMENT OF OPERATIONS
for the year ended March 31
(in thousands of dollars)

	<u>2023</u>	<u>2022</u>
REVENUE		
Canada Foundation for Innovation	\$ 20,631	\$ 21,311
Natural Sciences and Engineering Research Council of Canada	5,600	5,600
Canadian Institutes of Health Research	2,000	2,000
University of Saskatchewan	2,240	2,240
Province of Saskatchewan	4,100	4,100
Contracted research fees and other	3,602	1,716
	<u>38,173</u>	<u>36,967</u>
EXPENSES		
Salaries and benefits (Note 3)	25,770	25,855
Repairs and maintenance (Note 6)	3,356	3,677
Supplies and services (Note 13 and 15)	5,198	4,730
Bad debt expense	8	51
Utilities (Note 15)	3,100	3,162
Decommissioning costs (Note 14 and 15)	1,008	779
	<u>38,440</u>	<u>38,254</u>
OPERATING LOSS	(267)	(1,287)
Recognition of deferred contributions related to equipment and facility improvements (Note 11)	5,325	4,885
Amortization of equipment, facility improvements and intangible assets	(5,701)	(5,297)
	<u>(643)</u>	<u>(1,699)</u>
NET LOSS BEFORE OTHER ITEMS	(643)	(1,699)
OTHER ITEMS		
Construction loss recovery (Note 12)	288	1,357
Gain on termination of capital lease (Note 13)	-	562
	<u>-</u>	<u>562</u>
NET EARNINGS (LOSS) FOR THE YEAR	<u>\$ (355)</u>	<u>\$ 220</u>

Canadian Light Source Inc.
STATEMENT OF CHANGES IN MEMBER'S SURPLUS
for the year ended March 31
(in thousands of dollars)

	Unrestricted	Invested in equipment, facility improvements and intangible assets (Note 16)	2023	2022
Balance, beginning of year	\$ 8,003	\$ 3,732	\$ 11,735	\$ 11,515
Net earnings (loss)	21	(376)	(355)	220
Investment in equipment and facility improvements	(24)	24	-	-
Balance, end of year	\$ 8,000	\$ 3,380	\$ 11,380	\$ 11,735

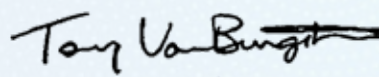
Canadian Light Source Inc.
STATEMENT OF FINANCIAL POSITION
as at March 31
(in thousands of dollars)

	<u>2023</u>	<u>2022</u>
CURRENT ASSETS		
Cash	\$ 1,170	\$ -
Accounts receivable (Note 4 and 15)	8,465	16,616
Grants receivable	8,335	2,084
Prepaid expenses	628	710
Inventory (Note 6)	4,079	4,086
	<u>22,677</u>	<u>23,496</u>
PREFERRED SHARES (Note 5)	-	-
EQUIPMENT AND FACILITY IMPROVEMENTS (Note 7)	46,731	44,398
DECOMMISSIONING FUND (Note 14)	3,478	2,395
INTANGIBLE ASSETS (Note 8)	375	413
	<u>\$ 73,261</u>	<u>\$ 70,702</u>
CURRENT LIABILITIES		
Accounts payable and accrued liabilities (Note 9 and 15)	\$ 6,097	\$ 5,215
Government remittances payable	178	29
Deferred revenue	253	1,921
Deferred contributions (Note 10)	3,363	3,388
	<u>9,891</u>	<u>10,553</u>
DEFERRED CONTRIBUTIONS RELATED TO		
EQUIPMENT AND FACILITY IMPROVEMENTS (Note 11)	37,663	36,584
ACCRUED DECOMMISSIONING COSTS (Note 14)	14,327	11,830
	<u>61,881</u>	<u>58,967</u>
COMMITMENTS (Note 18)		
MEMBER'S SURPLUS		
Unrestricted	8,000	8,003
Invested in equipment, facility improvements and intangible assets (Note 16)	3,380	3,732
	<u>11,380</u>	<u>11,735</u>
	<u>\$ 73,261</u>	<u>\$ 70,702</u>

APPROVED BY THE BOARD OF DIRECTORS



Chair, Board of Directors



**Chair, Finance and Audit Committee
of the Board of Directors**

Canadian Light Source Inc.
STATEMENT OF CASH FLOWS
for the year ended March 31
(in thousands of dollars)

	<u>2023</u>	<u>2022</u>
OPERATING ACTIVITIES		
Net earnings (loss)	\$ (355)	\$ 220
Recognition of deferred contributions related to equipment and facility improvements	(5,325)	(4,885)
Amortization of equipment and facility improvements	5,701	5,297
Construction loss recovery (Note 12)	(288)	(1,357)
Gain on termination of capital lease (Note 13)	-	(562)
Accrued decommissioning costs	929	697
	<u>662</u>	<u>(590)</u>
Changes in non-cash working capital		
Accounts receivable	8,151	(3,028)
Grants receivable	(6,251)	3,776
Prepaid expenses	82	(173)
Inventory	7	(175)
Accounts payable and accrued liabilities	1,170	1,224
Government remittances payable	149	(2)
Deferred revenue	(1,668)	447
Deferred contributions	(25)	(450)
	<u>2,277</u>	<u>1,029</u>
INVESTING ACTIVITIES		
Acquisition of equipment and facility improvements	(4,754)	(3,755)
Investment in decommissioning fund	(1,083)	(1,029)
	<u>(5,837)</u>	<u>(4,784)</u>
FINANCING ACTIVITIES		
Restricted contributions used to purchase equipment and facility improvements	4,730	3,755
INCREASE IN CASH POSITION	1,170	-
CASH POSITION, BEGINNING OF THE YEAR	-	-
CASH POSITION, END OF THE YEAR	\$ 1,170	\$ -

Canadian Light Source Inc.
NOTES TO THE FINANCIAL STATEMENTS
for the year ended March 31
(in thousands of dollars)

1. NATURE OF THE ORGANIZATION

Canadian Light Source Inc. (the "Organization") was incorporated under the Non-Profit Corporations Act of Saskatchewan on May 14, 1999 with its sole member being the University of Saskatchewan ("USask").

USask has constructed and licensed its third generation synchrotron light facility (the "facility") to the Organization, which is responsible for the operation and conduct of all activities related to the facility, including the design, installation, and maintenance of all beamlines and related equipment.

The mandate of the Organization is to advance scientific and industrial capabilities in synchrotron science and techniques.

Impact on operations of COVID-19 (coronavirus)

In early March 2020 the global outbreak of COVID-19 (coronavirus) began to have a significant impact on businesses through the restrictions put in place by the Canadian, provincial and municipal governments regarding travel, business operations and isolation/quarantine orders.

The Organization's prior year operations were impacted by COVID-19. Travel costs were significantly reduced, and several capital expenditure projects were delayed. While the Organization has returned to normal operations in the current year, there are ongoing impacts of COVID-19 specifically in the delay of certain capital expenditure projects.

2. SIGNIFICANT ACCOUNTING POLICIES

These financial statements have been prepared in accordance with Accounting Standards for Not-for-Profit Organizations ("ASNPO") and reflect the following significant accounting policies:

Revenue Recognition

The Organization follows the deferral method of accounting for contributions. Contributions from the Canada Foundation for Innovation, Natural Sciences and Engineering Research Council of Canada, and Canadian Institutes of Health Research, and other restricted grants are recognized as revenue in the year in which the related expenses are incurred. Contributions received in excess of expenses incurred are recorded as deferred contributions.

Contributions from USask, the Province of Saskatchewan and other unrestricted contributions are recognized as revenue in the period in which they are received or receivable if the amount to be received can be reasonably estimated and collection is reasonably assured.

Contracted research fees and contractor revenue are recorded as services are rendered. Advances related to construction of additional beamlines and technical equipment in excess of expenses are recorded as deferred revenue. Losses on contracts are recognized as soon as the amount can be reasonably estimated.

Deferred Contributions Related to Equipment and Facility Improvements

Deferred contributions related to equipment and facility improvements represent the unamortized portion of restricted contributions that were used to purchase the Organization's equipment and facility enhancements. Recognition of these amounts as revenue is deferred to periods when the related capital assets are amortized.

Cash

Cash includes balances held with banks.

Inventory

Inventory is valued at the lower of cost and net realizable value. Cost is determined using the first in, first out method.

Canadian Light Source Inc.
NOTES TO THE FINANCIAL STATEMENTS
for the year ended March 31
(in thousands of dollars)

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

Equipment, Facility Improvements and Intangible Assets

Equipment and facility improvements are recorded at cost. Assets, with the exception of asset retirement obligations and intangible assets, are amortized over their expected useful life using the declining balance method at the following rates:

Equipment and furnishings	20%
Computer equipment and software	30%
Facility improvements	10%
Building under capital lease	10%

Assets are amortized at one half of the above rates in the year of acquisition.

Asset retirement obligations are amortized on a straight-line basis over the expected remaining operating life of the facility. Intangible assets are amortized on a straight-line basis over the expected useful life to the Organization.

Assets under development are not amortized until they are available for use.

The Organization writes down long lived assets held for use when conditions indicate that the asset no longer contributes to the Organization's ability to provide goods and services. The asset is also written down when the value of future economic benefits or service potential associated with the asset is less than its net carrying amount. When the Organization determines that a long lived asset is impaired, its carrying amount is written down to the asset's fair value.

Decommissioning Costs

The Organization is required to decommission the facility when operations cease in accordance with its Particle Accelerator Operating License issued by the Canadian Nuclear Safety Commission ("CNSC"). The Organization expects the facility to operate for a 28 year period from commencement of operations.

Change in Estimate

Effective during the year ended March 31, 2023, the Organization increased its accrued decommissioning costs to \$14,327 to reflect changes to the inflation rate, interest rate and expected useful life of the facility. This change was applied prospectively and prior year results have not been restated. For the year ended March 31, 2023, equipment and facility improvements increased by \$2,210 with a corresponding increase to accrued decommissioning costs.

Financial Instruments

The Organization recognizes financial instruments when the Organization becomes party to the contractual provisions of the financial instrument.

Arm's Length Financial Instruments

Financial instruments originated/acquired or issued/assumed in an arm's length transaction ("arm's length financial instruments") are initially recorded at their fair value.

At initial recognition, the Organization may irrevocably elect to subsequently measure any arm's length financial instrument at fair value. The Organization has not made such an election during the year.

The Organization subsequently measures all arm's length financial assets and liabilities at amortized cost.

Transaction costs and financing fees are added to the carrying amount for those financial instruments subsequently measured at cost or amortized cost.

Canadian Light Source Inc.
NOTES TO THE FINANCIAL STATEMENTS
for the year ended March 31
(in thousands of dollars)

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

Related Party Financial Instruments

The Organization has no related party financial instruments required to be recognized at fair value.

All other related party financial instruments are measured at cost on initial recognition. When the financial instrument has repayment terms, cost is determined using the undiscounted cash flows, excluding interest, dividend, variable and contingent payments, less any impairment losses previously recognized by the transferor. When the financial instrument does not have repayment terms, but the consideration transferred has repayment terms, cost is determined based on the repayment terms of the consideration transferred. When the financial instrument and the consideration transferred both do not have repayment terms, the cost is equal to the carrying or exchange amount of the consideration transferred or received.

The Organization subsequently measures all related party financial instruments using the cost method less any reduction for impairment.

Transaction costs and financing fees directly attributable to the origination, acquisition, issuance or assumption of related party financial instruments are immediately recognized in net earnings (loss).

Financial Asset Impairment

The Organization assesses impairment of all its financial assets measured at cost or amortized cost. The Organization groups assets for impairment testing when there are numerous assets affected by the same factors. Management considers whether the issuer is having significant financial difficulty; or whether there has been a breach in contract, such as a default or delinquency in interest or principal payments in determining whether objective evidence of impairment exists. When there is an indication of impairment, the Organization determines whether it has resulted in a significant adverse change in the expected timing or amount of future cash flows during the year.

The Organization reduces the carrying amount of any impaired financial assets to the highest of: the present value of cash flows expected to be generated by holding the assets; the amount that could be realized by selling the assets at the statement of financial position date; and the amount expected to be realized by exercising any rights to collateral held against those assets.

Any impairment, which is not considered temporary, is included in current year net earnings (loss).

The Organization reverses impairment losses on financial assets when there is a decrease in impairment and the decrease can be objectively related to an event occurring after the impairment loss was recognized. The amount of the reversal is recognized in net earnings (loss) in the year the reversal occurs.

Income Taxes

The Organization is a non-profit entity and is exempt from income taxes.

Defined Contribution Pension Plan

The Organization has a defined contribution pension plan that is offered to permanent employees and employees with a 2 year term or greater. The Organization matches employee contributions.

Foreign Currency Translation

Monetary assets and liabilities denominated in foreign currencies are translated into CAD using the exchange rate in effect at year end. Other assets and liabilities are translated at the prevailing historical rates at the time of the transaction. Expenses arising from foreign currency transactions are translated at the exchange rates in effect on the transaction date. Unrealized exchange gains and losses are included in the determination of net earnings or loss for the year. The Organization does not enter into any derivative contracts to hedge its exposure to changes in foreign currency exchange rates.

Use of Estimates

The preparation of the financial statements in conformity with ASNPO requires management to make estimates and assumptions that affect reported amounts of assets, liabilities and disclosures of contingent liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the year.

Canadian Light Source Inc.
NOTES TO THE FINANCIAL STATEMENTS
for the year ended March 31
(in thousands of dollars)

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

Significant financial statement items that require estimates include the collectability of accounts receivable, the impairment of preferred shares, the useful life, discount rates and future costs associated with the asset retirement obligation, the estimate of project overrun costs on contracts, the useful life and potential impairment of equipment, facility improvements and intangible assets and potential contingencies. Actual results could differ from those estimates.

3. DEFINED CONTRIBUTION PENSION PLAN

Total pension contributions made by the Organization in the year totaled \$1,463 (2022 – \$1,453) and are included in salaries and benefits in the Statement of Operations.

4. ACCOUNTS RECEIVABLE

	2023	2022
Cash held by USask (Note 15)	\$ 5,690	\$ 15,710
Trade accounts receivable	743	582
Construction revenue receivable	1,961	259
Other	149	139
Allowance for doubtful accounts	(78)	(74)
	\$ 8,465	\$ 16,616

5. PREFERRED SHARES

The Organization had a loan agreement to finance Canadian Isotope Innovations Corporation (CIIC) for a total amount of \$5,260 at March 31, 2020. At March 31, 2020, the Organization had determined that there was an uncertainty regarding the collectability of the amounts advanced due to start up delays in the project and therefore recognized a full impairment of the loan receivable.

On April 30, 2020, the Organization exchanged the loan receivable and account receivable from CIIC for preferred shares from CIIC with a face value of \$6,321. The shares are redeemable by CIIC, are retractable by the Organization after December 31, 2024 and are non-voting. The shares bear a cumulative dividend at a rate equal to the lesser of the average prime rate plus 0.5% and 7.0% commencing January 1, 2024. The shares have been recorded at a fair market value of \$ nil (2022 – \$ nil).

6. INVENTORY

The Organization holds spare parts in stock at year end. The Organization recognized \$349 (2022 – \$257) of inventories as expense during the year.

7. EQUIPMENT AND FACILITY IMPROVEMENTS

	Cost	Accumulated Amortization	Net Book Value	
			2023	2022
Equipment and furnishings	\$ 13,384	\$ 9,497	\$ 3,887	\$ 4,274
Computer equipment and software	20,697	14,186	6,511	3,726
Facility improvements	61,457	35,052	26,405	27,417
Asset retirement obligations	10,919	4,856	6,063	4,495
Development in progress	3,865	-	3,865	4,486
	\$ 110,322	\$ 63,591	\$ 46,731	\$ 44,398

Equipment and facility improvements include supplier in-kind contributions of \$1,035.

Canadian Light Source Inc.
NOTES TO THE FINANCIAL STATEMENTS
for the year ended March 31
(in thousands of dollars)

8. INTANGIBLE ASSETS

	<u>Cost</u>	<u>Accumulated Amortization</u>	<u>Net Book Value</u>	
			<u>2023</u>	<u>2022</u>
Intellectual property	\$ 639	\$ 264	\$ 375	\$ 413

9. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

	<u>2023</u>	<u>2022</u>
Trade accounts payable	\$ 2,388	\$ 961
Accrued loss on construction	332	636
Accrued vacation payable	2,175	2,455
Other accrued liabilities	1,202	1,163
	<u>\$ 6,097</u>	<u>\$ 5,215</u>

10. DEFERRED CONTRIBUTIONS

	<u>2023</u>	<u>2022</u>
BEGINNING OF YEAR	\$ 3,388	\$ 3,838
Contributions received / receivable in year	33,996	32,219
Recognized as revenue	(27,617)	(28,914)
Contributions used for purchase of equipment and facility improvements	(6,404)	(3,755)
END OF YEAR	\$ 3,363	\$ 3,388

**11. DEFERRED CONTRIBUTIONS RELATED TO EQUIPMENT AND
FACILITY IMPROVEMENTS**

	<u>2023</u>	<u>2022</u>
BEGINNING OF YEAR	\$ 36,584	\$ 37,727
Contributions for purchase of equipment and facility improvements	6,404	3,755
Disposals in the year	-	(13)
Recognized as revenue	(5,325)	(4,885)
END OF YEAR	\$ 37,663	\$ 36,584

12. CONTRACTOR REVENUE

The Organization is party to an agreement to design and construct additional beamlines for the facility (Note 15). The Organization has recorded contractor revenues of \$6,179 (2022 – \$1,012) net of costs of the same amount.

During the year, the Organization recovered previously recognized expected losses related to active construction contracts of \$288 (2022 – \$1,357) due to the completion of the construction projects below the previously estimated losses and revised estimates for active projects.

Canadian Light Source Inc.
NOTES TO THE FINANCIAL STATEMENTS
for the year ended March 31
(in thousands of dollars)

13. OBLIGATION UNDER CAPITAL LEASE

The Organization entered into a capital lease with USask for the use of a building to be used as a user residence. The lease term was 20 years, commencing July 1, 2012, with the lease payments consisting of interest only for the first 10 years. The interest rate is based on the internal loan rate of USask. Interest expense in the period is \$ nil (2022 – \$17).

During the prior year, USask provided the Organization with notice of termination of the lease after a flood damaged the building. USask terminated the lease on December 17, 2021. This resulted in a gain on termination of the capital lease of \$562.

14. ACCRUED DECOMMISSIONING COSTS

The Organization anticipates the undiscounted future cash flows required to decommission the facility to be \$18,555 (2022 – \$13,986). The present value of the asset retirement obligation and the liability for decommissioning costs has been calculated using a credit-adjusted risk free interest rate of 2.9% (2022 – 2.4%) and an inflation rate estimate of 4.0% (2022 – 2.1%) and an estimated facility life of 28 years (2022 – 25 years). The change in these estimates resulted in an increase of \$2,210 to both the accrued decommissioning costs and the asset retirement obligations. The current year decommissioning costs of \$1,008 (2022 – \$779) include amortization of asset retirement obligations of \$642 (2022 – \$528) and costs associated with a financial guarantee to the CNSC of \$79 (2022 – \$83). The financial guarantee is in the amount of \$10,549 (2022 – \$10,549).

During the year, the Organization set aside funds for the purpose of funding the decommissioning liability of \$1,000 (2022 – \$950). At the end of the year, the balance of these funds is \$3,478 (2022 – \$2,395), which includes interest earned on the funds.

A reconciliation of the accrued decommissioning costs is as follows:

	2023	2022
BEGINNING OF YEAR	\$ 11,830	\$ 10,863
Accretion expense	287	168
Adjustment due to change in cost estimate	2,210	799
END OF YEAR	\$ 14,327	\$ 11,830

15. RELATED PARTY TRANSACTIONS

The Organization has recorded contractor revenues for construction of beamlines for USask of \$6,179 (2022 - \$1,012) net of costs of the same amount.

Under the terms of a License Agreement with USask, whereby the Organization has assumed responsibility for the operation, maintenance and enhancement of the facility, the Organization is committed to pay a license fee and utility costs. During the year, the amount of the license fee expensed by the Organization was \$100 (2022 - \$100) which has been included in supplies and services. During the year, the amount of utility costs were \$3,100 (2022 – \$3,154) which has been included in utilities expense.

During the year, the Organization purchased goods and services from USask in the amount of \$1,204 (2022 – \$1,001).

The financial guarantee to the CNSC for the decommissioning of the facility of \$10,549 (2022 – \$10,549) was obtained by USask on behalf of CLSI. The costs associated with the financial guarantee of \$79 (2022 – \$83) have been paid by CLSI and has been included in decommissioning costs.

Canadian Light Source Inc.
NOTES TO THE FINANCIAL STATEMENTS
for the year ended March 31
(in thousands of dollars)

15. RELATED PARTY TRANSACTIONS (continued)

All funds received by the Organization flow through, and certain payments to vendors of the Organization are made from, bank accounts administered by USask. At the end of the year, the amounts due from/(to) USask which are included in accounts receivable and accounts payable are as follows:

	<u>2023</u>	<u>2022</u>
Due from - cash on hand	\$ 5,690	\$ 15,710
Due from - grant funds received and not advanced	1,438	356
Due from - goods and services provided	233	246
Due (to) from - beamline construction	1,727	(1,646)
Due to - goods and services purchased	(185)	(369)

Routine operating transactions with USask are settled at prevailing market prices under normal trade terms.

These transactions are in the normal course of operations and are measured at the exchange amount, which is the amount of consideration established and agreed to by the related parties.

16. MEMBER'S SURPLUS INVESTED IN EQUIPMENT, FACILITY IMPROVEMENTS AND INTANGIBLE ASSETS

As indicated in the Statement of Changes in Member's Surplus, the Organization has made significant investments in equipment, facility improvements and intangible assets. These represent strategic investments by the Organization that cannot be funded from specific grants. These investments have been approved by the Board of Directors. The investments (net of amortization) in equipment, facility improvements and intangible assets are as follows:

	<u>2023</u>	<u>2022</u>
Facility improvements - beamlines	\$ 1,368	\$ 1,521
Facility improvements - medical isotope technology	629	702
Intangible asset - intellectual property	375	413
Facility improvements - office expansion	686	763
Other	322	333
Member's surplus invested in equipment, facility improvements and intangible assets	<u>\$ 3,380</u>	<u>\$ 3,732</u>

17. FINANCIAL INSTRUMENTS

The Organization is exposed to various risks through its financial instruments. The following analysis presents the Organization's exposures to risks at the reporting date.

Credit risk

The Organization is exposed to credit risk with respect to accounts receivable, grants receivable, decommissioning fund, and preferred shares. Credit risk is the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation. The Organization assesses credit risk on a continuous basis and to mitigate this risk, it maintains an allowance for doubtful accounts and has recognized a full impairment of preferred shares.

Canadian Light Source Inc.
NOTES TO THE FINANCIAL STATEMENTS
for the year ended March 31
(in thousands of dollars)

17. FINANCIAL INSTRUMENTS (continued)

Currency risk

Currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates.

The Organization does not actively manage this risk.

The accounts payable and accrued liabilities includes the following amounts expressed in CAD with respect to financial liabilities for which cash flows are denominated in foreign currencies:

	2023	2022
Accounts payable - USD	\$ 244	\$ 78
Accounts payable - CHF	757	-
Accounts payable - AUD	20	-
Accounts payable - Euro	32	75
	\$ 1,053	\$ 153

Liquidity risk

Liquidity risk is the risk that the Organization will not be able to meet the obligations associated with its financial liabilities. The Organization is exposed to this risk mainly in respect to its accounts payable and accrued liabilities and accrued decommissioning costs. To manage this risk, the Organization generates cash flows from operations which is monitored on a continuous basis.

18. COMMITMENTS

At the end of the year, the Organization had future commitments of \$1,503 (2022 – \$3,603).

	2023	2022
Salaries and benefits	\$ 178	\$ 166
Supplies and services	241	1,168
Maintenance	571	767
Equipment and facility improvements	513	1,502
	\$ 1,503	\$ 3,603

19. COMPARATIVE FIGURES

Certain comparative figures have been reclassified to conform with current year presentation.

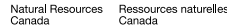
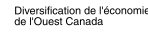
Thank You

Thank you to our government, academic and corporate funding partners for their investment in Canadian science and discovery.

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