

Time	Pond Inlet	Cairns Atrium	RFP214-215	Th 246	Th240	Schmon Tower 108
8am-9am	Registration					
9am-9:30am	Opening remarks					
9:30am-9:40am	Break to go to sessions					
9:40am-10am			T1 Presentation	T3 Presentation	T6 Presentation	T8 Presentation
10am-10:20am			T2 Presentation	T4Presentation	T7 Presentation	T9 Presentation
10:20am-10:40am			PR1 Presentation	T5 Presentation	PR2 Presentation	T10 Presentation
10:40am-11:20am	Coffee Break					
11:20am-11:40am			T11 Presentation		T13 Presentation	T16 Presentation
11:40am-12pm			T12 Presentation		T14 Presentation	T17 Presentation
12pm-12:20pm			PR3 Presentation		T15 Presentation	T18 Presentation
12:20pm-2pm	Lunch					
2pm-3pm	Plenary					
3pm-3:45pm		Poster Session PR4, P2, P4, P6, P7, P9, P11, P13				
3:45pm-4:30pm		Poster Session P1, P3, P5, PR 5, P8, P10, P12				
4:30pm-5pm	Coffee Break					
5pm-6pm	Awards and Closing Ceremony					

Please stand by your poster for the Poster Session your poster has been assigned to.

Codes are for peer-judging: T = Oral Talk, P = Poster, PR = Proposal

Session 1 (3:00 PM–3:45 PM)	PR4	Parth Chauhan	Reconfiguration of Spanning Trees of Triangulated Graphs Rotations, Edge Slides, and Face Slides
	P2	Elham (Ellie) Rezaee	An Impedimetric Immunosensor for Progranulin Detection Using Streptavidin-Biotin Conjugation on Carbon Screen-Printed Electrodes
	P4	Subrat Kumar Sethy	Electrostatic Tuning of Photosystem I Cofactors under Far-red Light
	P6	Chyenne Panetta	Impact of HOP-C on Anxiety, Depression & Stress in Post-Secondary Students with Mental Health Challenges
	P7	Noah Rhoden	Impacts of Developmental Exposure to Urban Stressors on Eastern Gray Treefrogs (<i>Dryophytes versicolor</i>)
	P9	Holly Eaton	Optimizing Production Methods for Low-Alcohol Wine Using Fungus-Resistant Grape Varieties and Ontario Yeast Strains
	P11	J.E. Schumacher	Analysis of Fe-Phosphates in Sedimentary and Igneous Analogues to Constrain Formational Environment of Fe-Phosphates Found in Jezero Crater, MARS
	P13	Nanhua Bu	Structural and Magnetic Study of Nd-doped La ₂ CoMnO ₆ Double Perovskites in Bulk and Thin-Film Forms
Session 2 (3:45 PM–4:30 PM)	P1	Gideon Oludeyi	Genetic Algorithms for Optimized Routing and Scheduling in Stochastic Home Health Care
	P3	Krishna Patel	A new side to an old photoacid: does HPTS have a secret?

	P5	Lucy Teminski	Rasping to remember: will the younger generation ever learn?
	PR5	David Justinico-Castro	Effects of Environmental Temperature on Parental Care and Offspring Thermoregulatory Development in Degus (<i>Octodon degus</i>)
	P8	Rachel Ciccone	Hormone and Metabolite Profile of Merlot Buds Treated with Tetralone Absciscic Acid
	P10	Nicholas Benton	Pathogen prevalence within populations of <i>Ixodes scapularis</i> (Ixodida : Ixodidae) surrounding a university campus in the Niagara Region, Ontario, Canada
	P12	Samuel Long	Fabrication and Structural Analysis of (La _(1-x) Sm _x) ₂ CoMnO ₆ Thin Films on SrTiO ₃ (100) Substrates Using Pulsed Laser Deposition

PR4

Parth Chauhan and Rahnuma Islam Nishat

Title: Reconfiguration of Spanning Trees of Triangulated Graphs Rotations, Edge Slides, and Face Slides

Keywords: Reconfiguration, Spanning Trees, Plane embedded graph, local operations

Reconfiguration problems study how to transform one feasible combinatorial configuration into another using a sequence of local operations, such that each intermediate step is a valid configuration. In this thesis, we study the reconfiguration of spanning trees of planar triangulations using three different flip operations: unconstrained rotations, edge slides, and face slides. The flip graph has each valid configuration as a vertex, and two vertices are connected if they can be converted to each other by a single flip. We present some results, including the connectivity of the rotation flip graph. We present an algorithm that preserves happy edges; the edge (u, v) is present in both the input tree T_{in} and the target tree T_{tar} , using safe-face routing. Finally, we study the connectivity and diameter of the constrained edge-slide and face-slide reconfiguration graphs, as well as how happy-edge preservation can be achieved under these operations.

Gideon Oludeyi, Beatrice Ombuki-Berman

Title: Genetic Algorithms for Optimized Routing and Scheduling in Stochastic Home Health Care

Keywords: "Genetic Algorithms", "Simulation", "Healthcare", "Optimization"

Home healthcare has emerged as a viable alternative to traditional healthcare delivery, offering personalized services to aging and homebound populations. However, planning caregiver routes and schedules remains a challenging optimization problem due to uncertainty in travel times and service durations caused by traffic conditions, weather, and other disruptions. This challenge, known as the Stochastic Home Healthcare Routing and Scheduling Problem (SHHCRSP), is further complicated by caregiver-patient incompatibilities and synchronized visits that require multiple caregivers to perform tasks simultaneously. We consider a multi-objective formulation that minimizes transportation costs, expected patient tardiness, and expected caregiver overtime. To address this problem, we develop genetic algorithm approaches that incorporate route-based crossover operators adapted from the vehicle routing literature. In addition, we introduce two novel crossover operators. The first, Consensus-Based Crossover (CBX), preserves patient-caregiver assignments shared by both parent solutions while reconstructing conflicting assignments through heuristic repair. The second, Neural Route Inheritance Crossover (NeuRIX), employs a neural scoring model to identify and inherit high-quality routes from parent schedules. Both operators use a cheapest insertion heuristic to repair infeasible solutions and maintain feasibility with respect to problem constraints. The proposed methods are evaluated under both a priori and a posteriori multi-objective optimization frameworks. Computational experiments on benchmark instances demonstrate that the proposed crossover operators achieve competitive performance relative to established genetic algorithm approaches, highlighting their potential for improving decision support in stochastic home healthcare operations.

Elham (Ellie) Rezaee

Title: An Impedimetric Immunosensor for Progranulin Detection Using Streptavidin-Biotin Conjugation on Carbon Screen-Printed Electrodes

Keywords: Alzheimer's | breast | dementia | electrochemical sensors | GP88 | kidney cancer biomarkers | liver | lung | ovarian | progranulin | prostate

Glycoprotein 88 (GP88), also known as progranulin, is a secreted biomarker that is overexpressed in several cancers and is also associated with neurological and inflammatory diseases. In this study, we report the first disposable electrochemical immunosensor for GP88 detection using a screen-printed carbon electrode modified with carboxylated multi-walled carbon nanotubes. We activated surface carboxyl groups via EDC/NHS chemistry, then covalently immobilized streptavidin to capture a biotinylated anti-GP88 antibody. After exposure to GP88, the immunosensor showed a 19% increase in charge-transfer resistance, which served as the analytical response and indicated successful antigen-antibody binding at the electrode surface. The fabrication procedure showed good reproducibility, with a relative standard deviation (RSD) of 4.05% across replicate measurements. The sensor provided a linear response over a GP88 concentration range of 25–500 ng/mL, with an estimated limit of detection of 52 ng/mL. Sensor specificity was evaluated using human serum albumin as a nonspecific protein control, which produced negligible signal changes compared with GP88. Additionally, the results showed that maintaining streptavidin hydration during bio-electrode fabrication is essential to preserve its biotin-binding activity and prevent undesirable changes in electrochemical response. Overall, this work establishes a simple and disposable electrochemical platform for direct GP88 quantification and provides a foundation for further optimization toward sensitive, selective, and practical electroanalytical detection of GP88 in clinically relevant samples. The proposed platform combines low-cost electrode fabrication, straightforward surface functionalization, and label-free impedance measurements, offering potential for future development of portable assays for GP88 monitoring in point-of-care applications.

P3

Krishna Patel

Title: A new side to an old photoacid: does HPTS have a secret?

Keywords: Photoacid, HPTS, Radical generation, DNA damage

This work is an examination of the light-induced generation of radicals by the photoacids pyren-1-ol and trisodium 8-hydroxypyrene-1,3,6-trisulfonate (HPTS). PhotoNMR revealed broadening of aromatic signals of pyren-1-ol upon exposure to purple light (385 and 410 nm). Electron paramagnetic resonance (EPR) spectroscopic experiments showed the generation of radicals by both pyren-1-ol and 8-hydroxypyrene-1,3,6-trisulfonate exposed to purple light but not by white light ($\lambda > 400$ nm). The g-value and hyperfine coupling constants of the EPR spectrum of irradiated HPTS are consistent with density functional theory calculations of the oxy radical produced by cleavage of the O–H bond of the 8-hydroxy group. Thiobarbituric acid reactive substance assays confirmed the generation of malondialdehyde when 1-palmitoyl-2-arachidonoyl-sn-glycero-3-phosphocholine (PAPC) and HPTS were exposed to purple light irradiation. On the other hand, no DNA damage was observed when single stranded DNA was exposed to purple light in the presence of HPTS.

Subrat Kumar Sethy

Title: Electrostatic Tuning of Photosystem I Cofactors under Far-red Light

Keywords: MCCE; Electrostatics; Photosystem I; FarLip

Photosystem I (PSI) can efficiently separate charge under different light conditions. However, how the protein environment tunes the redox properties of PSI during far-red light acclimation is still not fully understood. In this work, we used Multi Conformation Continuum Electrostatics (MCCE) to study the electrostatic environment of PSI on both the acceptor and donor sides. On the acceptor side, we calculated the midpoint potentials of the three iron-sulfur clusters, F_X , F_A , and F_B , in PSI from *Thermosynechococcus elongatus*, *Halomicronema hongdechloris*, and *Fischerella thermalis*. Although the overall arrangement of these cofactors is highly conserved, their calculated redox potentials show differences between species and light acclimation states. In *H. hongdechloris*, the F_X potential changes from -770 mV in the white light structure to -822 mV in the far-red structure, while F_A and F_B change from -610 to -572 mV and from -589 to -514 mV, respectively. On the donor side, we studied the special pair chlorophylls P_A and P_B in white and far-red light *H. hongdechloris*, with *T. elongatus* and *Chroococcidiopsis thermalis* as reference structures. The calculated P_A/P_B potentials increase by about 82/70 mV from white to far-red light. Mean-field analysis shows that these changes mainly come from differences in the surrounding protein and cofactor electrostatics, while the reaction-field contribution changes only slightly. These results together demonstrate that exposure to far-red light causes a change in the local electrostatic environment around the cofactors on both the donor and acceptor sides, without altering the overall structure of PSI.

Lucy Teminski and Gaynor Spencer

Title: Rasping to remember: will the younger generation ever learn?

Keywords: Snails, Learning, Memory, Retinoids

The feeding (rasping) behavior of the mollusc, *Lymnaea stagnalis*, is widely used to study the mechanisms of learning and memory due to its well characterized neural circuitry and conserved signaling pathways. For example, the vitamin A metabolite, retinoic acid, which plays an important role in memory formation in mammals, is also required for longterm memory following classical conditioning of the feeding behavior in *Lymnaea*. However, it has been previously shown that juvenile *Lymnaea* cannot form long-term memory to the same extent as adults. As such, we are currently examining whether retinoic acid plays a role in this differential learning ability between juveniles and adults. We first examined whether increasing the number of training sessions would induce memory in juveniles. Whereas adult animals exhibited memory after 1 training session, juvenile animals did not, and required 3 training sessions to show 24-hour memory. However, this memory did not extend to 48 hours. Previous studies in adults indicated that applying synthetic retinoids to adult *Lymnaea* could extend their long-term memories (from 24 hours to 60-hours). We are now determining whether similar retinoid treatments might also have the same ability to induce or prolong memory in juveniles. These studies will shed light on differences in memory formation with age, as well as the differential signaling pathways that might lead to these differences.

Chyenne Panetta

Title: Impact of HOP-C on Anxiety, Depression & Stress in Post-Secondary Students with Mental Health Challenges

Keywords: Honest, Open, Proud - College, Mental Health, Stigma, DASS-21 Scale

Stigma is believed to contribute greatly to the existing stressors of having mental health challenges (Corrigan et al., 2016). Self-stigma of mental illness is one facet that has been associated with depression, anxiety, and overall stress (Pescosolido & Martin, 2015). Honest, Open, Proud-College (HOP-C) is a peer-led invention program that is designed to help those with mental health challenges overcome the symptoms associated with self-stigma of mental illness (Corrigan et al., 2015). Previous research on the HOP-C program has shown that it was successful in reducing stigma related stress and had moderate effects on depression following completion (Mulfinger et al., 2018; Rüscher & Kösters, 2021). This study examined the change in depression, anxiety, and stress before and after program participation for both groups, using the DASS-21 scale. My hypothesis is that those who did participate in the intervention will show a reduction in depression, anxiety, and overall stress compared to those who did not participate. The HOP-C sample ($n=32$) and waitlist control sample ($n=31$) both completed the questionnaire at baseline, before participants were randomized, and after completing the intervention. Individuals who completed the HOP-C program showed a reduction in anxiety ($p=0.18$) and depression ($p=0.27$) compared to those who did not. However, there was no significant reduction in stress for the HOP-C group compared to the waitlist group ($p=.146$). These results imply a therapeutic impact of HOP-C that may extend to non-clinical samples.

David Justinico-Castro

Proposal

Title: Effects of Environmental Temperature on Parental Care and Offspring Thermoregulatory Development in Degus (*Octodon degus*)

Keywords: Parental care, environmental temperature, thermoregulation, phenotypic plasticity

Parental care is any parental behaviour that enhance offspring survival or success, often at a cost to the parents' fitness. Fluctuations in environmental temperature can alter caregiving behaviour and, in turn, influence offspring growth and development. Parental behaviour may also modify the thermal environment experienced by offspring, potentially contributing to developmental plasticity and evolutionary diversification. Degus (*Octodon degus*), a semifossorial rodent native to central Chile, exhibits diverse forms of parental care, including maternal, biparental, and alloparental care. Females may nurse and care for their own and other pups within communal nests, while males contribute to offspring rearing through behaviours such as building the nest, pup-licking, grooming, and huddling. Although the behavioural effects of parental care have been studied in degus, the thermal conditions that influence paternal care and subsequent offspring thermophysiological development remains poorly understood. This study aims to determine how variation in ambient temperature affects parent-offspring interactions and whether these interactions influence offspring thermoregulation. We hypothesize that elevated ambient temperature reduces parent-offspring contact and shifts caregiving toward lower-contact postures. To test this, mothers, parent pairs, or mothers with an alloparent female and their offspring will be acclimatized in separated cages to 15°C or 30°C during the first 28 days after offspring birth. Parental care behaviours will be recorded and quantified using standardized ethograms, while surface temperatures of parents and offspring will be measured using thermal imaging. We will assess how thermal conditions shape caregiving behaviour and whether variation in parental care is associated with offspring thermoregulatory responses.

Noah Rhoden

Title: Impacts of Developmental Exposure to Urban Stressors on Eastern Gray Treefrogs (*Dryophytes versicolor*)

Keywords: Urban, Ecology, Temperature, Amphibian

Urbanization exposes wildlife to environmental stressors, including elevated temperatures associated with urban heat island effects and artificial light at night (ALAN). Amphibians may be particularly vulnerable due to their ectothermic physiology, permeable skin, and complex life cycles. However, the interactive effects of urban stressors on amphibian development and post-metamorphic performance remain poorly understood. This study investigates how developmental exposure to warming and ALAN influences growth, metamorphic traits, and post-metamorphic behavior in the Eastern Gray Treefrog (*Dryophytes versicolor*). Tadpoles collected from southern Ontario were reared in a 2x2 factorial experimental design manipulating water temperature and nighttime light exposure, resulting in four treatments: control, warming, ALAN, and combined warming and ALAN. Survival and developmental progression will be monitored throughout the larval period. Preliminary findings indicate that ALAN significantly increased tadpole mortality and delayed time to metamorphosis. These findings suggest that the increase in ALAN near vernal pools could have negative effects on yearly survival and recruitment of local amphibians' species. By examining developmental carryover effects across metamorphosis, this study will improve our understanding of how urban stressors influence amphibian development and behavior. Findings will contribute to amphibian conservation and urban ecology by providing insight into the potential long-term consequences of environmental change for wildlife inhabiting urban wetlands.

Rachel Ciccone

Title: Hormone and Metabolite Profile of Merlot Buds Treated with Tetralone Absciscic Acid

Keywords: cold hardiness, tetralone abscisic acid, viticulture

Cold hardiness is a plant's ability to withstand cold temperatures and prevent primary bud death for spring bud break. A major aspect of Canadian cultural practices is to minimize this damage during the winter months. This is achieved through pruning and thermal blankets, alongside plant growth regulators, such as phytohormone analogues. Absciscic acid (ABA) is a plant phytohormone involved in dormancy, cold, salinity, and drought. However, normal ABA is short lived. To combat this, analogues are designed to prevent degradation. This analogue is tetralone ABA. The tetralone ring prevents cyclization after the oxidation of the 8'-methyl group, to allow the compound to persist in plant tissue. This may induce a downstream effect in the metabolite and hormone profile of treated *Vitis vinifera*. This is measured via untargeted metabolomics (UTM) and hormone profiling (HMP) studies. HMP studies the levels of ABA catabolites, including tetralone ABA, while UTM studies the overall bud metabolite profile. This was measured during the 2023-2024 dormancy period in Merlot two different rates: 0.50 g/L and 1.00 g/L, with an additional 1.00 g/L rate applied pre-harvest. It was found that phaseic acid (PA) and dihydrophaseic acid (DPA) levels were significantly different on 2023-11-20, while bud water content (%) increased on that day. This may suggest more dissolved solutes in the buds as osmoprotectants. Additionally, metabolites in the phenylpropanoid pathway, such as monoterpene glycosides, p-coumaryl flavonoid glycosides, and flavonoid dimers, were differently expressed. These metabolites produce many natural products, such as p-coumaryl derivatives, flavonoids, and monoterpenes present in wine.

Holly Eaton

Title: Optimizing Production Methods for Low-Alcohol Wine Using Fungus-Resistant Grape Varieties and Ontario Yeast Strains

Keywords: Fermentation, wine, low-alcohol, yeast

Recent shifts in alcohol consumption trends have led to an increase in demand for low- and non-alcoholic beverages. In Ontario, Canada, consumers are seeking wines that are lighter, fruitier and contain lower alcohol. In this study, we are investigating different methods to reduce alcohol in wine, with a focus on grape variety selection and the use of locally isolated yeast strains for fermentation. Sustainable Fungus-Resistant Grape (FRG) varieties have recently been introduced to Ontario with favourable properties for enhancing resilience in the grape and wine sector, including potential for producing high-quality wines with reduced alcohol. Pre-harvest data was collected over the 2025 ripening season for the Soreli and Cabernet Volos varieties that demonstrate different ripening patterns when compared to *Vitis vinifera* varieties. To assess the potential of FRG varieties for low-alcohol wine, Soreli (white) and Cabernet Volos (red), were fermented with either a commercial *Saccharomyces cerevisiae* yeast as the control or a locally isolated *Saccharomyces uvarum* strain (CS-6). Across all the fermentations, wines produced with CS-6 had significantly lower ethanol content when compared to the control wines. In addition, wines fermented with *S. uvarum* had higher glycerol content, higher favourable volatile aromas and generally trended towards reduced acetic acid production. Collectively, these results demonstrate a practical framework for producing lower-alcohol wines by combining variety selection and regionally derived yeast.

Nicholas Benton

Title: Pathogen prevalence within populations of *Ixodes scapularis* (Ixodida : Ixodidae) surrounding a university campus in the Niagara Region, Ontario, Canada

Keywords: Tick, Pathogen, trail, Lyme

Ixodes scapularis is a notable vector of multiple tick-borne pathogens in eastern North America. Commonly, *I. scapularis* is associated with the bacteria *Borrelia burgdorferi*, the primary causative agent of Lyme disease. The continual northward range expansion of *I. scapularis* has raised concerns of increased tick-borne pathogen prevalence in Ontario, particularly in southern municipalities such as the Niagara Region. However, recent surveys of tick populations and tick-borne pathogens in Ontario remain scarce, leaving gaps in identifying the risk tick vectors pose to the public. Thus, we seek to identify the occurrence of *I. scapularis* populations and any associated pathogens circulating in a popular recreational area of the Niagara Region. From May through October of 2026, tick surveillance is being performed around Brock University by tick dragging on six routes along popular walking trails comprising the Bruce Trail and Glenridge Quarry Naturalization Site. Ticks are being collected, identified, and *I. scapularis* nymphs and adults are tested for the presence of six different pathogens using a multiplex Polymerase Chain Reaction (PCR) analysis. From May 5th to July 6th, 62 *I. scapularis* nymphs and adults were collected from all six routes. In total, 16 individuals (26%) tested positive for *B. burgdorferi* and one individual (2%) tested positive for *Borrelia miyamotoi*, the causative agent of *Borrelia miyamotoi* disease. Furthermore, one individual (2%) tested positive for both pathogens. Collected *I. scapularis* will continue to be tested throughout the season to provide insight into the risk *I. scapularis* populations pose to communities in Niagara and southern Ontario.

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Title: Analysis of Fe-Phosphates in Sedimentary and Igneous Analogues to Constrain Formational Environment of Fe-Phosphates Found in Jezero Crater, MARS.

Fe-phosphate minerals in sedimentary rocks analyzed by the M2020 Perseverance rover in Jezero crater, identified in a polyolithic conglomerate on top of the delta and a mudstone in the inlet channel, represent important astrobiological targets as indicators of a habitable environment and components of a “potential biosignature”. These minerals include vivianite, metavivianite, (ferro)beraunite, ferrolaueite, santabarbarite, and other Fe-phosphates that are not distinguishable at PIXL’s resolution. Their formational environment remains somewhat unconstrained, with non-biogenic origins in both aqueous and igneous environments under consideration. Here, terrestrial analogues are analyzed from sedimentary (aqueous) and igneous occurrences to further constrain their origin and determine whether their formational environment was habitable. On Earth, Fe-phosphates often precipitate in aqueous environments or as authigenic minerals associated with organics, but they can also form in igneous environments, such as highly evolved, fluid-rich pegmatites, and may occur as detrital minerals in Jezero sediments. Terrestrial analogue samples were collected from a phosphate-rich marl in Monmouth County, NJ; Palermo No. 1 Mine, a pegmatite in NH; and Midvale, Rockbridge County, VA. Initial mineral identification used Raman spectroscopy (ROM) and SEM (Brock University). Palermo samples contain vivianite-group minerals as thin intergrowths in cleavage of triphylite, siderite, hagendorfite, sulfides, montebrasite, ludlamite, and mitridatite. Samples from My Creek contain Ca-phosphates, glauconite, and sulphides. Midvale samples do not contain relevant minerals. Samples will be further characterized using a PIXL-analogous wavelength-dispersive XRF spectrometer (Stony Brook University) from which, when compared to results from PIXL, we can learn about mixing relationships and textures in Martian rocks.

Samuel Long

Title: Fabrication and Structural Analysis of $(\text{La}_{1-x}\text{Sm}_x)_2\text{CoMnO}_6$ Thin Films on SrTiO_3 (100) Substrates Using Pulsed Laser Deposition

Keywords: Thin Film, Double Perovskite, PLD, X-ray Diffraction Analysis

Double perovskite is a class of material with the general chemical formula $AB\text{B}'\text{O}_x$, exhibiting great potential for magnetic and spintronic due to their functional properties. Thin-film samples can exhibit properties different from those of bulk materials because growth on a substrate can introduce epitaxial strain into the perovskite lattice. In this work, double perovskite thin films were prepared on the SrTiO_3 (100) substrates using pulsed laser deposition technique, with a series of Sm-substituted $\text{La}_2\text{CoMnO}_6$ compositions subjected to preliminary structural characterization. High-resolution parallel-beam X-ray diffraction was utilized to investigate the crystallite structure and preferred orientation of the films. Rocking curve measurement were used to evaluate crystalline alignment of the films. In addition, X-ray reflectivity measurements were used to determine the film thickness and characterize the surface properties. These preliminary measurements provide an initial evaluation structural quality and characteristics of the thin films.

Nanhua Bu

Title: Structural and Magnetic Study of Nd-doped $\text{La}_2\text{CoMnO}_6$ Double Perovskites in Bulk and Thin-Film Forms

Keywords: Double perovskites, Nd substitution, Thin films, Magnetic properties

Double perovskites exhibit a strong correlation between crystal structure and magnetic properties. Substitution of La by Nd can modify both the crystal structure and magnetic behavior because of the difference in A-site ionic size. In this work, $\text{La}_2\text{CoMnO}_6$, $\text{Nd}_2\text{CoMnO}_6$, and $(\text{La}_{1-x}\text{Nd}_x)_2\text{CoMnO}_6$ with $x = 0.2, 0.4, 0.6$, and 0.8 were investigated in both bulk and thin-film forms. Bulk samples were prepared by the solid-state reaction method, while thin films were deposited by pulsed laser deposition. X-ray diffraction was used to characterize the crystal structure of bulk samples. Scanning electron microscopy (SEM) and energy-dispersive X-ray spectroscopy (EDS) were employed to examine their surface morphology and elemental composition. The magnetic properties of the bulk samples were investigated under zero-field-cooled (ZFC) and field-cooled (FC) conditions at applied fields of 200 Oe and 5000 Oe. The results reveal a systematic evolution of magnetic behavior with increasing Nd substitution, including a decrease in the magnetic transition temperature from approximately 215 K to 180 K. The corresponding thin-film samples were also characterized by high-resolution parallel-beam X-ray diffraction to examine their structure and preferred orientation. Rocking curve measurements were used to evaluate the crystalline alignment and film quality. X-ray reflectivity was employed to estimate film thickness and surface roughness. Overall, the results demonstrate that Nd substitution significantly influences the structural and magnetic properties of the $\text{La}_2\text{CoMnO}_6$ -based double-perovskite system, while the thin-film measurements provide additional insight into the structural quality and growth behavior of the deposited films.