



MANARAT
SCIENCE
CLUB

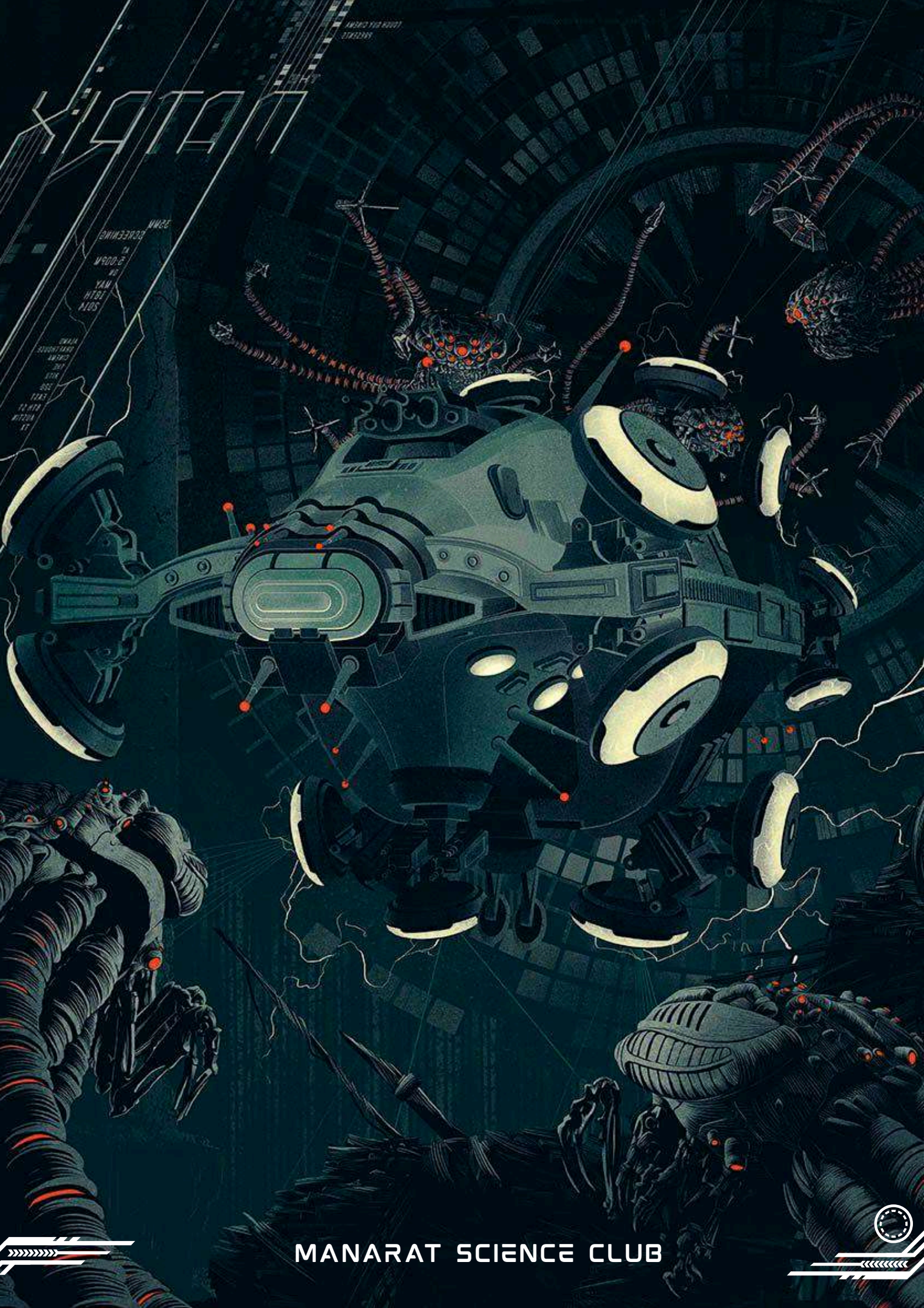
MANARAT SCIENCE CLUB

MAGAZINE

2026



MANARAT DHAKA INTERNATIONAL SCHOOL & COLLEGE



MANARAT SCIENCE CLUB





MESSAGE FROM THE CONVENER, ACADEMIC COMMITTEE, MANARAT TRUST

Bismillahir Rahmanir Rahim

A student led science magazine is a valuable academic exercise, as it documents the intellectual journey of learners beyond the standard curriculum. As we review the events of this year's STEM Fest through these pages, it is highly encouraging to see the academic rigor our students are engaging with.

Having spent decades in university research, I have observed that a student's aptitude for advanced studies is largely shaped during their school and college years. It is crucial that young minds are introduced to the scientific method early on learning to hypothesize, experiment, analyze data, and draw evidence-based conclusions, rather than merely memorizing theories.

The events documented in this magazine reflect this academic progression perfectly. When students from the medium levels engage with General Science and gradually take on the complex, multi variable problem solving required in the Physics, Mathematics, and Bio-Chemistry Olympiads, they are building the exact cognitive framework needed for university level research. Similarly, the Project Displays and Robotics competitions require them to take theoretical concepts and engineer practical solutions, which is the core of applied sciences.

I must highly commend the Manarat Science Club for their exceptional organizational acumen and academic foresight. Designing a competition structure that scales seamlessly from foundational categories to highly rigorous Olympiads requires profound subject expertise and meticulous planning. The club has truly set a benchmark for how scientific platforms should be curated and executed at the institutional level.

I congratulate and wish the students continued success in their studies and hope they carry this scientific temper with them into their higher education and future careers.

May Allah grant them the wisdom to seek knowledge sincerely.

Prof. Dr. Md. Mozammel Hoq
Convener, Academic Committee
Manarat Trust





MESSAGE FROM THE PRINCIPAL

Bismillahir Rahmanir Rahim
Assalamu Alaikum Wa Rahmatullahi Wa Barakatuhu

At Manarat Dhaka International School and College (MDIC), we view our students as an Amanat (a sacred trust). Our educational philosophy is deeply rooted in harmonizing academic brilliance with moral integrity, encapsulated in our pursuit of Faith, Education, Morality, and Excellence. It is through this lens of holistic development that I view the tremendous success of this year's STEM Fest.

This program beautifully showcases the intellectual rigor and analytical depth of our learners. Whether they are navigating complex equations in the Mathematics and Physics Olympiads, exploring the intricacies of life and matter in Bio-Chemistry, or engineering sophisticated Robots, our students are demonstrating exceptional dedication and discipline. These academic and technical endeavors are not merely about winning competitions; they are about cultivating a focused mind, a strong work ethic, and a profound understanding of the world around us.

As we advance in an era of rapid technological transformation, it is crucial that scientific advancement is guided by a strong moral compass. Through this fest, we are not just training technicians; we are nurturing ethical stewards and visionary leaders. We want our students to use their knowledge in Computer Science, engineering, and the pure sciences to benefit humanity and serve the nation with sincerity and responsibility.

I highly appreciate the meticulous efforts of our dedicated Club In-Charges, Dr. Maksudul Alam and Ms. Rokhsana Khanam, and the President of the Manarat Science Club, along with the entire organizing committee. Your commitment to providing a platform for such high level intellectual engagement is truly commendable.

May Allah (SWT) reward everyone involved in organizing this magnificent event. I pray that our students continue to scale new heights of intellectual and spiritual success, bringing pride to their institution, their families, and our country. In-Sha-Allah.

Brig Gen. S. M. Mahbub-Ul-Alam, OSP, SGP, ndc, psc (Retd)
Principal
Manarat Dhaka International School and College (MDIC)





MESSAGE FROM THE MANAGING DIRECTOR & CEO TRUST BANK PLC

It gives me immense pleasure to extend my heartiest congratulations to the Manarat Science Club on the publication of their magazine, commemorating the vibrant and intellectually stimulating STEM Fest.

As the Managing Director of Trust Bank PLC, I have always believed that the most valuable asset for our nation's future is the intellect, creativity, and innovative spirit of its youth. In today's rapidly evolving global landscape, STEM (Science, Technology, Engineering, and Mathematics) education is no longer just an academic requirement; it is the cornerstone of national progress. It is highly encouraging to see the esteemed institution fostering a culture where students do not just memorize facts, but actively question, experiment, and create.

The diverse categories of the STEM Fest reflect a truly holistic approach to learning. From the analytical rigor of the Mathematics, Physics, and Bio-Chemistry Olympiads and the hands on ingenuity of the Project Displays and Robotics competitions, this fest has provided a phenomenal platform for students to test their limits. These events do more than just identify academic excellence; they cultivate the critical thinking, teamwork, and resilience needed to solve real-world problems.

At Trust Bank PLC, we strongly believe in empowering the younger generation. The same analytical mindset and forward-thinking vision that drive scientific discovery are essential for building a sustainable, inclusive, and prosperous economy. We are proud to support initiatives that nurture these young minds and prepare them to become the ethical leaders and innovators of tomorrow.

I highly commend the Club In-Charges, the President, and the entire organizing team for their dedication and hard work. Your efforts in going beyond traditional classroom learning to create this platform will undoubtedly leave a lasting impact on the students.

As these young minds continue to code, build, calculate, and dream, we at Trust Bank PLC stand with them, ready to support their journey toward a smarter Bangladesh.

May Allah (SWT) bless the young scientists, innovators, and problem-solvers with wisdom, sincerity, and endless success in all their future endeavors.

Ahsan Zaman Chowdhury
Managing Director & CEO
Trust Bank PLC



CLUB IN-CHARGES



It gives me immense pleasure to share a few words on behalf of Manarat Science Club. Science is not just a subject learned in classrooms it is a mindset of inquiry, observation, and discovery. Our club is committed to nurturing this curiosity and empowering our students to think critically and creatively about the world around them. This year, we have introduced several new initiatives to inspire scientific engagement among our learners. One of our key activities is "Science Talk," a platform where students confidently present scientific concepts, innovations, and real-world applications. This initiative has strengthened their communication skills and enhanced peer learning. We are also proud to begin publishing our own student-led science journals, showcasing research articles, experiment findings, creative scientific writing, and innovative ideas from our young scientists. This publication will serve as a space for students to express curiosity and develop academic writing skills with a scientific outlook. In addition to these, our workshops, exhibitions, experiments, and collaborative projects continue to make the Science Club a hub of exploration and hands-on learning. We remain dedicated to creating opportunities that help students grow as thinkers, innovators, and problem-solvers. I extend my heartfelt appreciation to our respected Principal and Vice Principal for their continuous encouragement, visionary leadership, and unwavering support. Their guidance has shaped the club's success and motivated our students to reach greater heights.

Ms. Rokhsana Khanam
Club In-Charge, Manarat Science Club



The Manarat Science Club continues to shine as a vibrant center of creativity, curiosity, and scientific enthusiasm. This year, our students have achieved remarkable success, earning awards in science fairs, quiz competitions, and Olympiads. Their research projects and innovative models ranging from environmental solutions to technological prototypes have been widely appreciated for their originality and practical value. Our hands-on workshops, experiments, and project-based activities have further strengthened students' analytical thinking and teamwork skills. Participation in exhibitions and science festivals has given our young learners the opportunity to showcase their talents with confidence, receiving recognition for both their scientific understanding and presentation skills.

We are also proud of the new collaborations established with academic and scientific organizations. Through expert-led seminars and mentorship sessions, students have gained valuable insights that inspire them to aim higher and think beyond the classroom. I express my heartfelt gratitude to our respected Principal and Vice Principal for their constant encouragement and guidance. Their support has played a vital role in the club's continued growth and success.

As we look ahead, we remain committed to nurturing curiosity and empowering our students to become future thinkers, innovators, and problem-solvers. Let science lead the way.

Dr. Maksudul Alam PhD
MCCA Convener & Club In-Charge, Manarat Science Club





MESSAGE FROM THE FORMER PRESIDENT OF MANARAT SCIENCE CLUB

Serving as President of the Manarat Science Club - the largest club in our school - has been one of the most rewarding privileges of my life. It gave me invaluable real-world experience in leadership, team management, and strategic communication.

When our team took over, the club was in a quiet period and urgently needed fresh energy. Within just one year, driven by a rejuvenated executive committee, we transformed it into the fastest-growing club in terms of student engagement, active participation, and overall activity. Through our direct and indirect mentorship programs, our members went on to win an unprecedented wave of national and international medals. On top of that, launching our flagship event - the MDIC STEM FEST - exceeded every expectation, establishing itself as one of the largest student-led English medium STEM festivals.

This progress would not have been possible without our Principal Sir, who trusted us with the platform to execute our vision. My sincere gratitude goes to Maksud Sir, Roksana madam and every single teacher and staff member, whose continuous guidance made every hurdle manageable. Finally, a huge thank you to our executive team, general members, and volunteers - your passion and hard work made this year unforgettable.

Jaif Bin Morshed
Former President
Manarat Science Club



MESSAGE FROM THE PRESIDENT OF MANARAT SCIENCE CLUB

Bismillahir Rahmanir Rahim

As the President of Manarat Science Club it is a profound honor to welcome you to our magazine. Science isn't just about memorizing facts for exams, it's more about impact. We live in a world where we can write codes that automate tasks, design robots from scratch, and solve massive real world problems with a single insight. Manarat Science Club has long been a beacon of curiosity, excellence within our school. It has become a symbol of what young minds can achieve when they are given the opportunity to explore, question and create. From revolutionary projects to events, our journey has been one of continuous growth.

As we step into a new session, we carry with us the legacy of those who came before us and the responsibility to push boundaries even further. Our vision is to build a club that not only excels in science and technology but also fosters leadership, integrity, and a deep sense of purpose.

As we embark on this new chapter, let us remember that true success does not lie in the accolades we collect, but in the impact we leave behind. Let us strive to be a club that inspires, a community that uplifts and a legacy that endures.

May Allah grant us sincerity in our efforts and success in our journey.

Mohammad Ajmain Faieq
President
Manarat Science Club



INTRODUCTION

Pioneering Scientific Excellence : Manarat Science Club

The Manarat Science Club (MSC) stands as one of the most distinguished student-led scientific communities, operating under the banner of Manarat Dhaka International School and College, Gulshan, Dhaka. Founded on the belief that curiosity is the foundation of progress, MSC has grown into a powerhouse of academic and scientific achievement and home to over 120 members, 70+ completed projects, and 97 accolades earned in just this past year alone, each one a testament to the dedication and brilliance of its members.

At its core, MSC is driven by a singular mission: to cultivate the next generation of thinkers, innovators, and problem-solvers. Through bimonthly scientific journals, hands-on experiments, research initiatives, expert-led seminars, and inter-school collaborations, the club provides its members with an environment where intellectual curiosity is not just encouraged rather it is celebrated. The club operates under the guidance of Dr. Maksudul Alam and Ms. Rokhsana Khanam, Club In-Charge, whose mentorship has been instrumental in shaping the club's vision and continued success.

MSC's commitment to academic excellence extends well beyond the classroom. In January 2025, the club proudly hosted the MDIC STEM Fest 2025, a two-day inter-school scientific festival held on the 9th and 10th of January that brought together over 1,200 students from 45+ institutions across Bangladesh. Spanning disciplines such as Mathematics, Physics, Biology, Chemistry, and Robotics, alongside a range of engaging co-curricular competitions, the festival served as a prestigious platform for young scientific minds to challenge themselves, collaborate, and excel.

What distinguished STEM Fest 2025 was not merely its scale, but the exceptional standard of its execution. The event was entirely student-driven under mentorship of our club incharges and convener. From the meticulous design of competition questions designed by MSC's own students, to the rigorous evaluation process carried out by over 62 trained MSC members operating under carefully pre-determined mark schemes. This level of academic ownership and organizational maturity is a reflection of the values MSC instils in every one of its members. Winners were recognized and honored with cash prizes, crests, and medals which carried the weight of genuine academic merit.

Not to mention, Manarat's own students performed with distinction throughout the festival, securing positions in both junior and senior categories across multiple disciplines which is a proud demonstration of the talent that MSC nurtures within its walls.

As we continue to grow, collaborate, and innovate, the Manarat Science Club remains steadfast in its commitment to fostering scientific excellence, academic integrity, and a genuine love for discovery. We warmly welcome fellow institutions to join us in this journey because the future of science is brightest when brilliant minds come together.



HONORING OUR DEDICATED TEACHERS

FEMALE TEACHERS 2026-2027



MS. TAHMINA YEASMIN
VICE PRINCIPAL



MS. SHAILA AKHTER
BIOLOGY



MS. JAKIA TUS SADIA
BIOLOGY



MS. MAHMUDA AKHTER
SCIENCE



MS. KANIZ KULSUM
CHEMISTRY



MS. SUMAIYA ALIM PROTIVA
PHYSICS

MALE TEACHERS 2026-2027



MR. ANWARUL KARIM
VICE PRINCIPAL



MR. M. M. MOHSIN QURAISHI
PHYSICS



MR. KHAN MD. SHOWRAV
PHYSICS



MR. IMRAN AHMED
CHEMISTRY



MR. JOYNUL ABEDIN
CHEMISTRY



MR. ABUL FATTAH
PHYSICS



MR. MINHAZUL KARIM
SCIENCE



CURRENT MEMBERS

2026-2027



MOHAMMAD AJMAIN FAIEQ
PRESIDENT



**EHSAS MOSTOFA
NAHI**
**VICE
PRESIDENT**



NAFISA NAWAR
**VICE
PRESIDENT**



YASA RAHMAN
**GENERAL
SECRETARY**



ZARIFAH TASNIM
**GENERAL
SECRETARY**



MD. SAKIB RAIHAN
**ASSISTANT
SECRETARY**



TAKIA NUJHAT
**ASSISTANT
SECRETARY**



**AKIL IBN
WADUD**
COORDINATOR



**M SHAYAAN IBN
TAUFIQUE**
COORDINATOR



**JUNAYNA
EKSUM**
COORDINATOR



**ANTARA
TARANNUM ROSE**
COORDINATOR



CURRENT MEMBERS

2026-2027



NUREEN RAYAN

HEAD OF
DEPARTMENT
ACTIVITY



OMAMA SALEHIN

HEAD OF
DEPARTMENT
ACTIVITY



NUSAIBA FARHA

HEAD OF
DEPARTMENT
ACTIVITY



**SHAFE ISLAM
ALFE**
CREATIVE
DIRECTOR



AARINA MOITRY
HEAD OF
DEPARTMENT
MEDIA



RUHMA HOSSAIN
HEAD OF
DEPARTMENT
ACADEMICS



**SAZID HASAN
SAFWAN**
HEAD OF
DEPARTMENT
ACADEMICS



ABRAR JAWAD
HEAD OF
DEPARTMENT
IT



**MOHAMMAD
TAHIAD ISLAM**
HEAD OF
DEPARTMENT
ENGINEERING AND
INNOVATION



LEGACY MEMBERS

2025-2026



**JAIF BIN
MORSHED**

PRESIDENT

2025 - 2026



**MOHAMMAD
AJMAIN FAIEQ**

VICE PRESIDENT

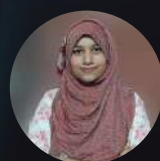
2025 - 2026



**NUREEN
RAYAN**

VICE PRESIDENT

2025 - 2026



FARIHA TASNIM

**GENERAL
SECRETARY**

2025 - 2026



YASA RAHMAN

**ASSISTANT
SECRETARY**

2025 - 2026



**FARHEEN
HASNAT**

ACTIVITY HOD

2025 - 2026



**SAMIN YASAR
TWAHA**

EVENTS HOD

2025 - 2026



TAKRIM AREEFIN

**DEPUTY
COORDINATOR**

2025 - 2026



NUSAIBA FARHA

**DEPUTY
COORDINATOR**

2025 - 2026



GOLAM SAMI

**CREATIVITY
HOD**

2025 - 2026



**KASHFEE
RAHMAN**

**CREATIVITY
HOD**

2025 - 2026



TAMIM IQBAL

MEDIA HOD

2025 - 2026



**MAISHA
SIDDIQUA**

**CREATIVE
DIRECTOR**

2025 - 2026



**NABIHA
ZAMAN**

ACTIVITY HOD

2025 - 2026



ABRAR JAWAD

IT HOD

2025 - 2026



**DHRUBO
HASAN**

**ENGINEERING &
INNOVATION HOD**

2025 - 2026



MDIC STEM FEST 2026

ORGANIZED BY



MANARAT
SCIENCE
CLUB



MANARAT DHAKA INTERNATIONAL SCHOOL & COLLEGE

OUR SINCERE THANKS TO THE
SPONSORS AND PARTNERS WHO MADE
MDIC STEMFEST 2026 POSSIBLE

TITLE SPONSOR



ROBOTICS PARTNER



FOOD PARTNER



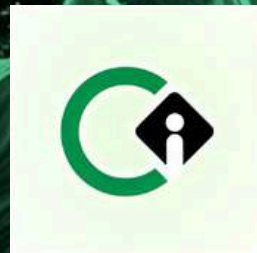
CHESS PARTNER



MEDIA PARTNER



PRINT MEDIA PARTNERS



STALL PARTNERS



LIST OF SCHOOLS



SOUTH BREEZE SCHOOL

COMPUTER SCIENCE

The Computer Science segment, organized by MSC STEM Fest, is one of the festival's premier technology-focused events which brings together enthusiastic participants from different schools. Open to students from classes 7 to A2, the competition challenges participants to demonstrate their digital proficiency through a rigorous, timed coding and algorithmic problem-solving assessment. Designed to evaluate logical reasoning, programming skills and computational knowledge. The event encourages students to develop a deeper appreciation for software development and innovation. Outstanding performers are recognized with special prizes. Through this segment, students are inspired to explore the vast possibilities of computer science and prepare themselves for the rapidly evolving digital world outside.

TECH TALK

Tech Talk offers an engaging platform for meaningful discussion and intellectual dialogue exchange. Designed to bridge academic learning with contemporary technological advancements, this segment brings together students, technology enthusiasts and educators. Taking a turn from the traditional competition style, participants engage in presentations and seminar-style discussions on emerging fields such as Artificial Intelligence (AI), automation and other transformative technologies. Outstanding speakers and active contributors are recognized with special certificates and awards to celebrate both their knowledge and communication skills. By encouraging critical dialogue and informed perspectives, Tech Talk nurtures analytical thinking and empowers students to become confident voices in shaping the future of technology.

FUN SEGMENT

Adding excitement and energy to the festival, the Fun Segment is one of the most eagerly anticipated events of the STEM Fest. Open to participants of all age groups, this segment moves beyond conventional academic competitions through science-themed trivia, puzzles and interactive team challenges. Designed to test quick thinking, teamwork and general STEM knowledge, the activities create an enjoyable and engaging learning experience for all participants. Winners are recognized with medals and exciting prizes, while every participant gains valuable experiences and lasting memories. Above all, the Fun Segment highlights that scientific learning can be both intellectually stimulating and immensely enjoyable.

GENERAL SCIENCE (JUNIOR)

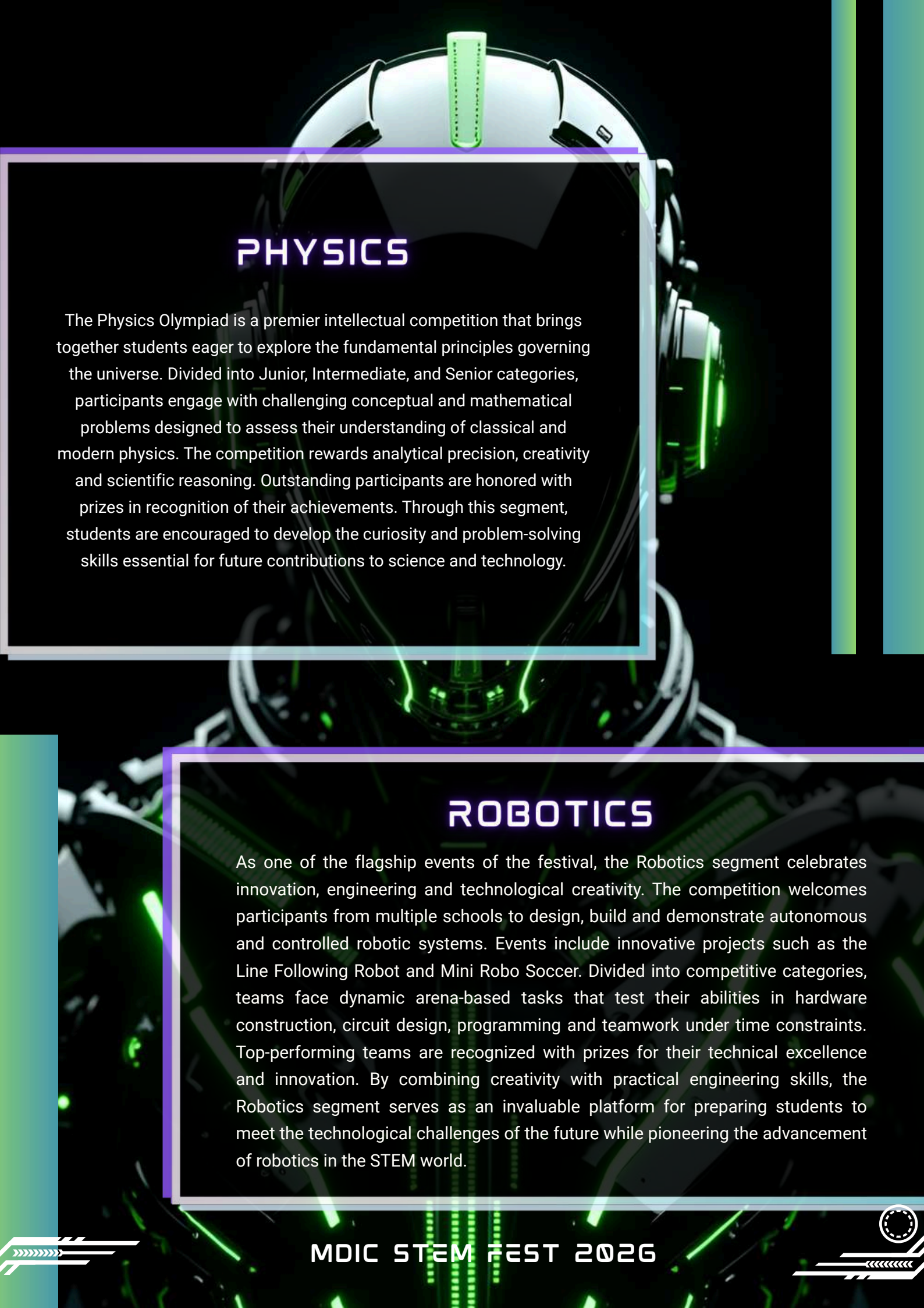
Tailored specifically for younger participants, the General Science (Junior) segment serves as a foundational event within the festival. Open to enthusiastic junior school students, this competition introduces participants to a structured academic environment while nurturing their interest in science. Competitors answer an engaging set of multiple-choice questions covering fundamental concepts in Biology, Physics and Chemistry. Outstanding performers are recognized with prizes in celebration of their achievements. By encouraging curiosity and scientific exploration from an early age, this segment helps build confidence and lays the groundwork for future academic success.

MATHEMATICS

The Mathematics Olympiad of the fest, is a high-calibre academic competition that attracts talented mathematics enthusiasts. Participants are divided into appropriate grade categories to ensure a fair and balanced contest. The competition features a challenging set of problems designed to assess numerical proficiency, logical reasoning, analytical thinking and problem-solving speed. Top-performing participants are awarded special prizes. By exploring the beauty and power of mathematics, this segment fosters intellectual curiosity and equips students with the skills necessary to tackle complex real-world challenges. This segment acts as a stepping-stone to foster mathematical application outside the bounds of squared classrooms and into the real world.

BIO-CHEM

The Bio-Chem segment presents a sophisticated academic challenge for students passionate about the life sciences intertwined with the study of chemical mechanisms in all life forms. Welcoming participants from various classes, the competition focuses on the interdisciplinary relationship between Biology and Chemistry. Participants tackle a demanding set of questions covering topics such as cellular processes, organic chemistry, biochemical pathways and metabolism. High-performing students are recognized with prizes for their academic excellence and dedication. This segment encourages critical analysis and scientific inquiry while inspiring future pursuits in medicine, pharmacy, biotechnology and biomedical research.



PHYSICS

The Physics Olympiad is a premier intellectual competition that brings together students eager to explore the fundamental principles governing the universe. Divided into Junior, Intermediate, and Senior categories, participants engage with challenging conceptual and mathematical problems designed to assess their understanding of classical and modern physics. The competition rewards analytical precision, creativity and scientific reasoning. Outstanding participants are honored with prizes in recognition of their achievements. Through this segment, students are encouraged to develop the curiosity and problem-solving skills essential for future contributions to science and technology.

ROBOTICS

As one of the flagship events of the festival, the Robotics segment celebrates innovation, engineering and technological creativity. The competition welcomes participants from multiple schools to design, build and demonstrate autonomous and controlled robotic systems. Events include innovative projects such as the Line Following Robot and Mini Robo Soccer. Divided into competitive categories, teams face dynamic arena-based tasks that test their abilities in hardware construction, circuit design, programming and teamwork under time constraints. Top-performing teams are recognized with prizes for their technical excellence and innovation. By combining creativity with practical engineering skills, the Robotics segment serves as an invaluable platform for preparing students to meet the technological challenges of the future while pioneering the advancement of robotics in the STEM world.

PROJECT DISPLAY

The Project Display stands as one of the cornerstone events of the festival, providing students with an opportunity to showcase original ideas and innovative solutions to real-world problems.



Divided into Groups A, B, and C, participants present physical prototypes, research findings and project displays before an esteemed panel of judges. The evaluation emphasizes scientific methodology, creativity, practical application and overall presentation skills. Exceptional projects are recognized with prestigious

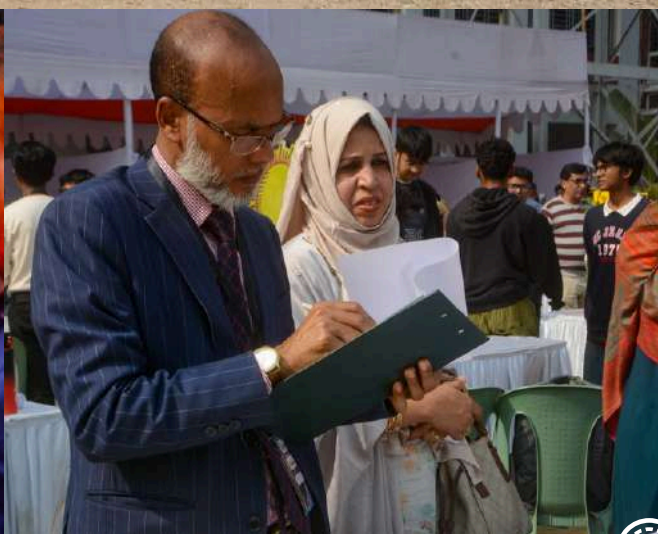








our
TEAM





our TEAM



BY ENATION X

FC26







**DRONES,
SUBMARINE,
MARS ROVER
AND FORMULAE
CAR**





CLOSING CEREMONY

The closing ceremony of the MDIC Interschool STEM Fest 2026 served as a magnificent culmination to days of relentless innovation and scientific inquiry. The program formally commenced with inspiring welcome addresses from the institution's top leadership, including the respected Principal, Brigadier General S. M. Mahbub-Ul-Alam, whose words set a visionary tone for the aspiring young scientists in the audience. Following the leadership's address, the stage was opened to our distinguished attendees, where the chief and special guests delivered eloquent speeches emphasizing the transformative power of STEM education. Adding a vibrant cultural dimension to the academic festivities, the ceremony featured captivating musical performances and an absolutely enchanting dance presentation by the blooming talents of our pre-primary section, whose joyful energy and innocent charm completely captivated the audience and energized the atmosphere. The grand finale centered around the prestigious prize-giving segment, where the Principal, alongside the dedicated Manarat Science Club coordinators and department heads, took to the stage to distribute trophies, certificates, and accolades to the brilliant winners across the various olympiads, robotics competitions, and project exhibitions. As the proud recipients held their awards high, the ceremony transcended the mere distribution of prizes. It stood as a powerful testament to the Manarat Science Club's guiding philosophy, proving that when curiosity is nurtured, the next generation of trailblazers is born.



MANARAT
SCIENCE
CLUB

ACHIEVEMENTS

INTERNATIONAL MATHEMATICS AND SCIENCE OLYMPIAD



THE MANARAT SCIENCE CLUB IS OVERFLOWING WITH PRIDE TO ANNOUNCE THE OUTSTANDING INTERNATIONAL ACHIEVEMENT OF OUR STUDENT, TAHMID HASAN (CLASS 5), WHO SECURED A SILVER MEDAL IN SCIENCE AT THE 22ND INTERNATIONAL MATHEMATICS AND SCIENCE OLYMPIAD (IMSO) 2025.

This was a truly historic event, marking the first time Bangladesh participated in the prestigious IMSO, which was held from October 5 to 9, 2025, at the Albukhary International University in Alor Setar, Kedah province, Malaysia. Tahmid's remarkable journey began with the inaugural Bangladesh Mathematics and Science Olympiad (BdMSO) on August 22, 2025, which led to a rigorous, step-by-step selection process, choosing him as one of only 12 students to represent the nation. Competing among over 400 pupils from 23 countries, Tahmid's exceptional performance in the international science division earned him one of the two coveted Silver Medals won by the entire Bangladeshi delegation in this historic debut. His unwavering dedication, deep passion for science, and relentless drive for excellence allowed him to shine brightly against the world's finest young minds, bringing immense honor and pride to the Manarat Science Club and the school community.



SCHOLASTICA STEM FINITY COMPETITION



The Manarat Science Club is delighted to announce the outstanding achievements of our students in the Scholastica STEM Finity Competition. Their remarkable performance stands as a testament to their dedication, perseverance, and passion for scientific excellence.

Through their relentless hard work and commitment, our students continue to uphold the name of Manarat Dhaka International School, demonstrating excellence at the highest level and bringing pride to our institution by excelling in numerous prestigious competitions.

We extend our heartfelt congratulations to all the winners and participants for their exceptional accomplishments. May this success inspire even greater achievements in their future endeavors.





BISC TECH AREA 51

The Manarat Science Club is incredibly proud to share the amazing accomplishments of our students in The Bangladesh International School and College's (BISC) "Tech Area 51" competition.

With unwavering dedication and perseverance, our students once again embody the spirit of Manarat Dhaka International School, showcasing remarkable talent and achieving excellence in yet another distinguished competition. Their achievements continue to bring honor and pride to our school community.

We sincerely congratulate all the winners and participants for their outstanding performance. May this milestone serve as motivation for even greater triumphs in the days ahead.



INNOVERSE BANGLADESH

THE MANARAT SCIENCE CLUB IS INCREDIBLY PROUD TO SHARE THE AMAZING ACCOMPLISHMENTS OF OUR STUDENTS IN THE NATIONAL INNOVERSEBD SCIENCE EVENT HOSTED IN BUET ON NOVEMBER 14TH AND 15TH.



With unwavering dedication and perseverance, our students once again embody the spirit of Manarat Dhaka International School, showcasing remarkable talent and achieving excellence in yet another distinguished competition. Their achievements continue to bring honor and pride to our school community.



MANARAT SCIENCE CLUB



National Science & Technology Carnival, Dhaka University

CONGRATULATIONS

NATIONAL SCIENCE AND TECHNOLOGY CARNIVAL
HIGHER SECONDARY CATEGORY (PROJECT DISPLAY)

3rd place



The Manarat Science Club (MSC) is teeming with pride as we congratulate our exceptional students from Manarat Dhaka International School & College (MDIC) for their stellar achievements at The National Science & Technology Carnival, organized by Youthpreneur, University of Dhaka!

CONGRATS!

NATIONAL SCIENCE & TECHNOLOGY CARNIVAL
PRIMARY CATEGORY OLYMPIAD



PRIMARY CATEGORY
OLYMPIAD

CONGRATS!

NATIONAL SCIENCE & TECHNOLOGY CARNIVAL
HIGHER SECONDARY CATEGORY



HIGHER SECONDARY
CATEGORY OLYMPIAD

CONGRATS!

NATIONAL SCIENCE & TECHNOLOGY CARNIVAL
JUNIOR CATEGORY OLYMPIAD



JUNIOR CATEGORY
OLYMPIAD

CONGRATS!

NATIONAL SCIENCE & TECHNOLOGY CARNIVAL
JUNIOR CATEGORY (ART)



JUNIOR CATEGORY ART

CONGRATS!

NATIONAL SCIENCE & TECHNOLOGY CARNIVAL
JUNIOR CATEGORY (QUIZ)



JUNIOR CATEGORY QUIZ

MANARAT SCIENCE CLUB



BANGLADESH PHYSICS OLYMPIAD

The Manarat Science Club is incredibly proud to share the outstanding accomplishments of our students in the Bangladesh Physics Olympiad (BdPhO) Regional Round for the Dhaka-North region, held on December 5th.

Competing among more than 10,000 participants, our students achieved truly astounding results. With unwavering dedication, passion for learning, and a drive for excellence, they once again embodied the spirit of Manarat Dhaka International School. Their remarkable performance in this prestigious competition brings immense honor and pride to our entire school community.

Category A

- Walif Rayees (Class 6) – 2nd Position
- Tahmid Hasan (Class 5) – 5th Position
- Md Mahmudul Hasan Minhaz (Class 5) – 6th Position
- Mohammad Awsaf bin Kashem (Class 7) – 6th Position
- Nashmia Naira (Class 7) – 7th Position
- Aysha Mahjabin (Class 7) – 8th Position
- Afif Muhammad (Class 5) – 8th Position

Category B

- Dhrubo Mohammad Ishrar (Class 8) – 7th Position
- Tasnia Amin Tuba (Class 9) – 7th Position
- Mir Farhin Rahman (Class 7) – 8th Position
- Samanta Islam (Class 7) – 8th Position
- Muskan Rahman (Class 7) – 9th Position

Category C

- Yeasin Ibn Aurangzeb (Class AS) – 4th Position
- Safir Mahmud (Class AS) – 6th Position
- Raiyan Muttaki (Class AS) – 6th Position
- Daniyal Yamin Khan (Class AS) – 6th Position
- Ahnaf Farhan (Class AS) – 8th Position

Category D

- Jaif Bin Morshed (Class A2) – 5th Position
- Md Abdullah Al Mahdi (Class A2) – 8th Position

The aforementioned awardees have now advanced to the National Round scheduled to be held in Foy's Lake on January 15th, 2026. From this stage, participants will be selected for the National Camp, where they will receive specialized training and preparation for the International Physics Olympiad in three different countries.

We extend our heartfelt congratulations to all the qualifiers and wish them the very best of luck as they move forward to represent Manarat and Bangladesh on greater stages.





**MANARAT
SCIENCE
CLUB**

RESEARCH

THINK . EXPERIMENT . CREATE

"The Fourth Industrial Revolution (4IR) is transforming the world through advanced technologies such as Artificial Intelligence (AI), robotics, biotechnology, the Internet of Things (IoT), big data and automation. Unlike previous industrial revolutions, 4IR connects the physical, digital and biological worlds. For students, it offers enormous opportunities for innovation, scientific discovery and solving global challenges. Developing scientific knowledge, creativity, critical thinking and ethical values will be essential for building a prosperous future in the age of the Fourth Industrial Revolution."

– Prof.Dr.Md. Mozammel Hoq
Convener, Academic Committee
Manarat Trust

Quantum–Biological Nanomaterials for Sustainable Energy Harvesting and Cosmic Radiation Shielding

BY REDWAN HOSSAIN (BATCH-28)

Introduction: The Intersection of Biology and Quantum Engineering

Can biological mechanisms be genetically engineered to create quantum nanomaterials that can be used for the formation of green energy and protect us from cosmic radiation? This question may seem absurd. How can such a complex mechanism be achieved? However, the rate at which we are progressing in technology and science suggests that the existence of such a material is indeed possible. Through groundbreaking advances in nanotechnology, quantum physics and quantum computing, we can succeed in forming the given interdisciplinary concept the creation of a quantum-biological nanocomposite which can both protect us from harmful solar and cosmic radiation as well as give a reliable and sustainable energy source by converting the energy from the radiation into other usable forms like electricity. The process may seem simple. Using quantum science and nanotechnology to methodically combine with biologically inspired polymers for a dual function – shielding and giving energy. It uses vital concepts from different aspects of science for capturing energy, nanostructure analysis, forming nano-scale structures, self-healing mechanisms, simulation and modelling, and assessing the project's sustainability. The project aims for a fully adaptive, self-healing, and eco-friendly energy material. This could aid in deep space exploration and solve the energy crisis already affecting a huge part of the population.

Mathematical Modeling and Computational Simulation

Apart from these layers, we will also need some modelling using mathematics and physics. First, quantum simulations will be used to predict the structure alignment between the different layers and will allow accurate and efficient transfer of energy among the layers. Thus, we can review our model before the main project is launched, ensuring that the final project is accurate and efficient. We will also use optical modelling to simulate light interaction to optimize the thickness and refractive indices for absorbing most of the radiation from infrared to X-ray radiation. Monte Carlo Simulations will also be used to make the different layers interact with radiation to predict the possible effects and secondary particle scattering. Lastly, we will make use of the thermodynamic and kinetic models for:

- Energy Storage rate: $[\eta = \text{efficiency factor}, P_{\text{loss}} = \text{dissipative forces}]$
- Self-healing recovery: $R(t) = 1 - e^{-kt}$

These models give an experimental design, guiding as a theoretical and practical logic.

Addressing the Global Energy Crisis and Radiation Threats

Coming to the energy crisis, a lot of the traditional methods for achieving energy require combustion or the constant use of other resources for extraction. Combustion causes the emission of air pollutants and greenhouse gases, which aid in global warming. The many different 'advanced ways' like solar power, wind power or hydroelectricity have their own limitations, including efficiency, lifespan and environmental impact. The collapse of a dam, for example, can cost millions through rescue, flooding, loss of lives and livestock. Wind turbines, on the other hand, cause tall poles that destroy the beauty of nature (visual pollution). Apart from energy, there is another issue. Every year, a certain amount of solar and cosmic radiation penetrates the Earth's protective atmosphere and causes many severe cases like skin cancer, cataracts, etc. Thus, through these current problems comes unique research and a frantic search for a solution that would provide lasting energy and protection.

Bio-Inspiration: Learning from Radiation-Resistant Extremophiles

When we look towards Mother Nature, we get the idea for a possible solution. The vast kingdom of Fungi contains many extremophiles that can tolerate extreme radiation through a protective melanin layer (many fungi near Chernobyl had these qualities) or by instantaneous self-repair (microorganisms on the International Space Station have these qualities). These fungi have the ability to form pigments that absorb, dissipate, or utilize ionizing radiation as an energy source. Similarly, our advances in quantum materials like graphene and quantum dots give us the scope for unprecedented radiation absorption and charge transport. Seems simple, right? It's not. The main challenge is combining these two different fields to achieve both quantum efficiency and biological resilience. This will set the foundations for a material platform that is capable of both absorbing and tolerating cosmic energy. This process aligns with Sustainable Development Goals 7 (Affordable and Clean Energy) and 13 (Climate Action) through the use of green synthesis, along with recyclable designs built from non-toxic materials. The theoretical framework for the project is:

- **Physics:** The theory of quantum mechanics will be used, which governs how the electrons in the nanoscale structures can absorb and transport energy from one section to another.
- **Chemistry:** Nanostructure analysis and synthesis, along with surface chemistry, determine the stability, reactivity and compatibility.
- **Biology:** The way molecules can self-heal, regenerate, and self-assemble will help in the understanding of how this system works.
- **Mathematics:** Simulating energy transfer, radiation mitigation using computational models for optimization.

These transdisciplinary concepts provide an outline for genetically engineered multifunctional materials that have a wide assortment of adaptability based on their environment.

The Five-Layer Architecture of the QBN

The QBN (Quantum Biological Nanocomposite) will be comprised of five different yet interlinked layers that will help to achieve each of the different goals, i.e. radiation shielding, generation of energy, etc., which are as follows:

- There will be a layer that will be capable of capturing high-energy particles from the cosmic and solar radiation, along with the photon particles, to reuse this energy by converting it to other usable forms. This layer will comprise quantum dot particles like Copper Indium Disulfide (CuInS_2) and plasmonic nanoparticles like Silver and Gold. This layer can be called the energy absorption layer.
- Next, there will be a charge transport layer that will transfer electric charges rapidly to ensure that there is minimal loss. This will help to use cosmic and solar radiation as a primary energy source. This will be a source of green energy because the energy is harvested from the radiation without combustion or other forms of pollution. This layer will comprise Graphene, Titanium Carbide ($\text{Ti}_3\text{C}_2\text{Tx}$), a short layered MXene, and conductive polymer bends.
- This layer has to be able to store energy. It will store the converted energy transported by the previous layer in an electrochemical form. This storage system ensures that stored energy can still be supplied for a short period if the system malfunctions, giving time to work on repairs. This layer comprises Pseudocapacitive oxides like Manganese (IV) oxide (MnO_2) or polymer-based storage of energy in a solid state.
- The fourth layer will be the self-healing layer. This will repair the damage caused by the radiation or by any of the charges escaping. This will comprise mostly proteins like Polydopamine, peptide scaffolds, and microencapsulated repair agents. This layer is vital as it ensures the long-lastingness of the project.
- The final layer will be of a biodegradable material to support the structure and mechanism. This will also ensure environmental safety and act as a barrier to the radiation. This layer will comprise biodegradable polymer matrices like cellulose and Polylactic-co-glycolic acid.

The layers will form a flexible, durable and lightweight composite, fabricated using a layer-by-layer assembly.

Fabrication Methodology and Experimental Validation

The fabrication and experimental design consist of many steps; the main steps are as follows:

- Quantum Component Synthesis, by arranging the Carbon quantum dots acquired from organic waste and MXene extraction by etching of MAX phases under mild conditions to reduce toxicity.
- Dopamine polymerization in mild alkaline solutions forms a protective structure like melanin, which absorbs radiation and stabilizes the structure.
- The different layers will be assembled, with vacuum annealing and with flexible substrates for shielding and structural support. Microcapsules which contain a monomer that can repair the structure are embedded between the layers.
- In the end, after the assembly, we use Transmission Electron Microscopy for analyzing the structure. We use beams of different radiation in the electromagnetic and visible spectra for optical absorption. The use of the Raman effect in the chemical composition, and different electrochemical tests will be applied for energy storage behavior, along with radiation chamber tests for shielding efficiency and self-repairing rate.

Environmental Impact and Strategic Applications

Initial modelling suggests that quantum confinement and transfer efficiency between graphene molecules will increase the rate of energy transfer and decrease the rate of energy loss. This research functions as both an energy collector and a radiation shield, becoming a unique paradigm-like solution that combines two problems unlike traditional photovoltaics. This can simultaneously power its own internal systems, protect the inhabitants of Earth, and self-repair, with an extra bonus of getting another source of green energy for domestic and industrial uses. The design eliminates the use of toxic elements like lead or other non-biodegradable materials like plastics and replaces them with carbon-based nanostructures and organic polymers. The recyclability in case of a malfunction or system failure is about 80%, and this also reduces about 50% of the emission rate when manufacturing this project. This project can also be used in other fields like space and medicine.

Environmental Impact and Strategic Applications

However, there are some limitations. The uncertainty of material stability, quantum dot safety, and the juxtaposition of the organic-inorganic materials make it a very complex project. There are also many testing limitations, and thus the full success of the programme cannot be guaranteed.

However, through advances in technology, we can achieve further and succeed and reach other future goals like green energy and deep space exploration, both manned and unmanned missions. They can be powered and, at the same time, be protected using this system. That is what makes this so unique.

This represents the future of science, where we can boundlessly explore the depths of nanotechnology and the quantum realm. By mixing physics, chemistry, biology, and environmental science, this is just the pivot and the stepping up to the vast world of knowledge that lies within the universe.



PLACEBOS

By Azizul Hakim (B25)



Placebos, Latin for "I shall please", are any inert substances or procedures that lead to the improvement of an individual's mental or physical health. The improvement itself is referred to as a placebo effect or response. It is theorized that the change in state of mind, lifestyle, and brain activity of the individuals when they know they are receiving a form of medication can lead to triggering the placebo effect. It isn't limited to medications or treatments either; just thinking that water tastes or looks different may trigger a placebo effect, making it seem as if the taste really changed! Expectations and state of mind are major triggers for placebo effects. Various studies show that placebos may cause real, measurable psychological changes, similar to effective medicine. This is why they are an important topic of study for psychology and medicine.

A Japanese medical journal published a study in 1962 exploring the placebo effect. 13 students sensitive to Japanese lacquer tree leaves had the actual leaf rubbed onto one of their hands and told that it was a harmless leaf from another plant. The opposite was done for their other hand. All of them developed rashes on the hand rubbed with the harmless leaf; however, only two developed rashes on the hand rubbed with the actual lacquer leaf! This experiment demonstrated the placebo effect alongside the nocebo effect, placebo's evil twin. A response is called a nocebo effect when it worsens the individual's condition. This usually stems from the individual expecting adverse effects from the medication, as demonstrated by the experiment. (Nocebo means "I shall harm"!)

Placebos aren't used as medicine; however, they are an important factor to consider when developing new treatments. Whenever a new treatment is tested, it is compared to a placebo used as a control. A group of patients is split in half: some receive the actual treatment; others receive the placebo. The effects are recorded and compared. The treatment is considered effective if it performs better than the placebo. But is the use of placebos really ethical? It is greatly debated if the use of inert substances or treatments without the patient's knowledge, even if their health really does improve, is really the right thing to do. It is argued that their use may "erode" away patients' trust due to their dependence on deception. Their use also poses a risk to the patient's health (in case the placebos don't have any effect).

Doctors try their best to avoid using placebos as much as possible. If a placebo is being used, the patients are usually informed beforehand. They also maintain a positive relationship with their patients to prevent possible nocebo effects. "Open-labelled" placebos are also being tested, where the patients knowingly take them. The results, so far, show that placebos may even take effect even if the patients know they are taking them.

In the end, our knowledge of placebos and their effects on the mind-body relationship is still incomplete. Whether a medical nuisance or a helpful phenomenon, placebos reveal how much more we have left to explore about ourselves! With a better understanding of placebos, it may even be possible to apply them alongside treatments to further boost their effectiveness!



Procrastination

BY MAHDIYA FARHEEN (B25)
FAIROOZ NAWAR SOHA (B25)

Introduction

We have all experienced at least one dreadful night; slumped over your desk, the hue of the laptop screen burning your sight, running on espresso and adrenaline, cursing yourself for not finishing an assignment on time. Suddenly, it's 11:59 pm again.

This scenario is frequent in a procrastinator's life. They understand it is a terrible habit, affecting oneself physically and psychologically, yet why does it feel impossible to snap out of it? Why do we do this to ourselves?

Let's explore the science of procrastination.

What Is Procrastination, And The Causes Behind It?

Procrastination is linked to basic human tendencies such as emotional avoidance, in which people delay tasks to avoid stress, fear, or boredom. It is a short-term method for regulating emotions rather than managing time; as quick gratification causes us to favor immediate benefits over delayed ones, resulting in short-term pleasure rather than long-term goals. Furthermore, because modern life adds pressure and distractions, procrastination has become a coping method for emotional depletion.

Psychological Theories and Studies on Procrastination

Temporal Motivation Theory (TMT) proposes that procrastination stems from how we value (or devalue) future rewards in comparison to immediate costs. Motivation is calculated as $\text{expectation} \times \text{value} / (\text{impulsiveness} \times \text{delay})$. Procrastination is more likely when the reward is far away, there is a significant delay and the task is unpleasant. Temporal Decision Model extends TMT by explicitly modeling "task aversiveness" and "outcome utility" like how unpleasant the task is now vs how excellent the outcome will be. Delays occur when people prioritize task aversiveness over outcome usefulness. The activity Aversiveness Model focuses on how much the individual believes the activity to be unpleasant, uninteresting, difficult, or anxiety-inducing. High aversiveness indicates more procrastination.

The Role Of The Brain

Procrastination is heavily influenced by two parts of the brain, the limbic system and the prefrontal cortex, which are involved in a tug of war, with the limbic system emerging as victorious over the rational prefrontal cortex.

The amygdala, a key structure in the limbic system responsible for processing emotions such as fear and anxiety, activates when we are challenged by an overwhelming task. This action steers us towards more enjoyable activities, resulting in the release of dopamine, a feel-good hormone.

Avoiding a task simply reduces stress, which procrastination is closely tied to. However, this temporary relief is overrode by the incoming anxiety before the deadline.



Reasons of Procrastination

Emotions like impulsivity challenge in resisting immediate distractions, postponing gratification and poor motivation leads to placing excessive value on immediate rewards while undervaluing future advantages. Furthermore, distractions such as mobile devices, social media platforms, and juggling multiple tasks impair concentration and lack of structure like ambiguously defined tasks lead individuals to postpone initiation.

Conclusion

In the end, a lot of us suffer from bouts of procrastination. Understanding one's emotions and triggers, and the negative consequences, both mental and physical, and implementing effective strategies can help to break free from the shackles of this disastrous habit.

Positive And Negative Aspects Of Procrastination

Although procrastination is commonly seen as a harmful activity, it has some positive aspects, such as:

- Many procrastinators deem putting off difficult tasks leads them to produce a better quality of work, as they focus on getting smaller, easily achievable tasks conquered.
- Procrastination can lead to better decision making, allowing fruitful ideas to marinate for a longer time, ultimately bringing along a better quality and amount of work.

However, the negative effects of procrastination are far more significant, such as:

- Chronic procrastinators are prone to repeatedly delaying tasks until the very last moment. Lower self-esteem, stress and guilt are intertwined with this action, alongside overstimulation of stress hormones such as cortisol. Over time there is a chance of the development of mental illnesses such as anxiety and depression.
- Repeated procrastination strengthens neural pathways in the brain associated with task avoidance, leading it to become easier in the future, while the pathways for focus and discipline begin to weaken. Alarming, studies have shown that grey matter in the brain is decreased due to frequent procrastination, along with the increased stimulation of stress hormones, which impairs cognitive and mental well-being.

Strategies To Combat Procrastination

As with the majority of life's challenges, procrastination can be overcome, with a few simple strategies and consistency. Experts suggest drawing up a to-do list, with clear structured tasks with a due date, such as: identifying and avoiding distractions which affect your productivity, rewarding yourself after completing any task you find particularly challenging or trying to break down large agonizing tasks into smaller ones to make them more approachable.



“MURPHY’S LAW DOESN’T MEAN THAT SOMETHING
BAD WILL HAPPEN. IT MEANS THAT WHATEVER CAN
HAPPEN WILL HAPPEN.” — JOSEPH COOPER,
(INTERSTELLAR)

MDIC STEM FEST 2027

COMING SOON.....



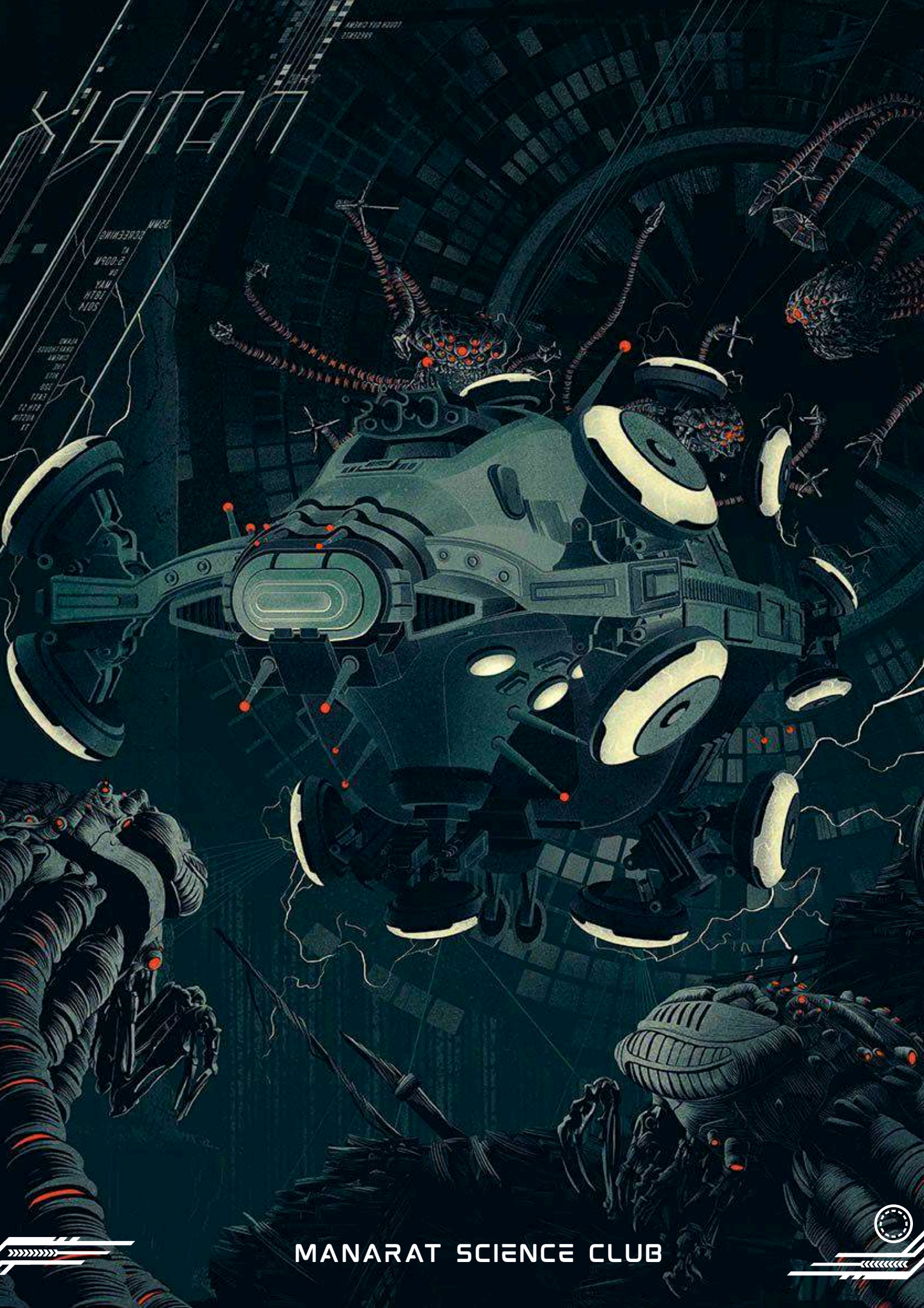
Manarat Dhaka Int. School &
College H.No 16, Road No. 104
Gulshan 2, Dhaka 1212, Bangladesh



+880192-0522197



misc.manaratscienceclub@gmail.com



MANARAT SCIENCE CLUB





Follow us on:



• Facebook: Manarat Science Club



• Instagram: @ManaratScienceClub



**Scan to visit our
Official Website**

AN ORIGINAL PUBLICATION OF THE MANARAT SCIENCE CLUB

© 2026 Manarat Science Club. All rights reserved.