RIPPLES

VOLUME XI ISSUE II DECEMBER 2021

Upcoming Events

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Note from the HOD

Greetings to one and all!

I am happy to report that in-person classes have resumed this semester. Even though the signs of the ongoing pandemic are still everywhere—in the posters urging people to follow the safety guidelines, in the safety masks covering the faces of our students and colleagues—the halls and pathways of our campus are once again thrumming with creative energy and scholarly zeal.

I hope you will enjoy this issue of our bi-annual newsletter – Ripples, put together by the newly formed Editorial board. They have undertaken the responsibility of coming up with the newsletter, and I wish them the very best in all of their endeavours. May this tradition continue in the future as well.

- Dr. Ananya Das

Message from the parents

"The Department of Physics at Chowgule College has not only positively influenced my daughter, but also helped her to achieve her goals independently. I'm grateful to all the teachers that are guiding her in the field of Physics in a stellar manner. My best wishes to all the students, the teaching and the non-teaching staff for keeping up their good work."

- Mrs. Matilda Fernandes
(Mother of Ms. Meliza Souza)

"Elishka was fortunate to have studied in your institution. Along the way, she developed liking for mathematics, derivations and solving numerical problems. The credit for this goes to your faculty. Thank you very much.

A special thanks to Prof. Ananya, Prof Yatin, Prof Ashish."

- Dr. Wilson Vaz
(Father of Ms. Elishka Vaz)

"As per my knowledge and understanding as a parent of a student of the Physics Department, my observations are as follows:

The Physics department of the institution is a very disciplined department, updated with advancement of Physics concepts and ideas and focusing on student development and fostering, giving right direction to students and providing exposure to them to carry on research in various fields of Physics.

I have also observed that on the personal front the teachers show parental love by reprimanding students when they falter and showering affection for noteworthy actions.

Finally, to conclude, I would like to acknowledge the hardwork and commitment of the faculty members to nourish confidence and all round development of a student."

- Mr. Rajeev Desai
(Father of Ms. Shantadurga Desai)

Physics Alumni Speak

"I had a wonderful experience studying at Parvatibai Chowgule College. The teachers were open and approachable and the department always tried to give us exposure to different fields in Physics. There were numerous talks and workshops conducted by respected researchers in the field that showed us the depth of the subject. Being a Math Minor, I was also able to enjoy the warmth of the Mathematics department.
I am currently pursuing my Masters in Physics at IIT Palakkad."

- Nikhil Mesquita (Batch of 2019-2020)

"I joined Chowgule College to fulfill my academic and extra-curricular requirements soon after my fathers posting to Goa. I was fortunate to have been guided by my professors namely Yatin Sir, Ashish Sir and Ananya Ma'am. Above all, I made wonderful friends in various departments. The passion for Physics instilled in college encouraged me to seek admission for my MSc in the subject at Mumbai University.
My sojourn at Chowgule College may have ended, but the values shall endure forever and enable me to fulfill my dream of becoming an Education Officer in the Indian Navy."

- Akanksha Dwivedi (Batch of 2015)

It is indeed a matter of great pride and privilege for the Department of Physics to announce that Miss. Shantadurga Desai, a student of the 2019-2020 batch of the Physics Department secured a Government Merit Scholarship for the First and Second terms during the year 2019-2020.

- Shantadurga Desai (Batch of 2019-2020)

"I am a proud alumnus of the Department of Physics of Chowgule College and grateful to it for giving me the opportunity to serve physics. I thank the department of Physics for giving me the opportunity to serve for the physics subject by inducting me as member of Board of Studies for two years.
I have to remember my Gurus Prof. R.B. Ghantwal, Prof. (Ms) Menon, Prof. N.V. Kamat, Prof. S.M. Sadique, Prof. S.N.P Raiturkar and Late Prof. B. Honsurkar who laid a strong foundation of Department of Physics and also I appreciate the efforts of current teaching staff of the department for the upgradation."

- Dr. Satish Keluskar (Vice Principal/ Head, Department of Physics at P.E.S's RSN College of Arts and Science, Farmagudi-Goa)

CONGRATULATIONS DR. SATISH!

Department

Mr. Yatin P. Desai attended the virtual "Optical School 2021", a scientific lecture series, jointly organized by the Indian Association for the Cultivation of Science (IACS) Kolkata and Horiba Scientific India from 6th to 8th September 2021.

Dr. Ashish M. Desai participated as a resource person in the Summer School on "Advanced Molecular Dynamics Simulation" jointly organized by the International School of Photonics, Cochin, University of Science and Technology, Cochin, Department of Physics, Kathmandu University, Nepal, and Scidart Academy held during 6th and 17th September 2021.

National Youth Parliament 2021

Four students from the Physics department, three from the TY and one from the SY, participated in the National Youth Parliament organized by CMO of Goa and MIT School of Governance at Dr. Shyama Prasad Mukherjee Stadium on November 11, 2021 on the occasion of 60 years of Liberation of Goa. The theme for the same was 'Celebrating Democracy.'

NPTEL Achievements

Four students have successfully completed the SWAYAM (Study Webs of Active Learning for Young Aspiring Minds)/NPTEL (National Program Technology Enabled Learning) Courses. They are:

1. Ms. Meliza Maria Souza (TYBSc) – Experimental Physics II
2. Ms. Fatima Myriam Barreto (TYBSc) – Experimental Physics II
3. Mr. Keegan Fernandes (TYBSc) – Data Science for Engineers
4. Ms. Sejal Uday Lotliker (SYBSc) – Electromagnetism

Government Merit Scholarship

Three students have received the Government Merit Scholarship for the year 2020-2021. They are:

1. Mr. Hrishikesh Sainath Chanekar from TYBSc
2. Ms. Meliza Maria Souza from TYBSc
3. Ms. Sejal Uday Lotliker from SYBSc

Students participation in the Quiz competition

Eight students participated in the National level quiz on Basic Concepts in Physics organized by Dr. A. G. D. Bendale Mahila Mahavidyalaya, Jalgaon on account of 112th Birth Anniversary of Dr. Homi Jahangir Bhabha for Undergraduate Science students. Four students scored 80% and above in the quiz competition.

Ms. Sakshi Swapnil Desai (SYBSc) secured 2nd place in Classical Singing (Swarbrahma) at 'All Goa Performing Art e-Festival Event' organised by the Government College of Khandola.

Highlights

Welcome Sir Nikhil!

A warm welcome to Sir Nikhil Mahesh Mandrekar!
He has completed his BSc Physics from St. Xaviers College, Mapusa, and MSc Physics from Goa University. Since 2015, he has been teaching Undergraduate Physics at Ganpat Parsekar College of Education, Harmal.
His ongoing research includes working on 'Borate glasses doped with Gd and Fe, Structural and Electrical properties of Nd+3 doped Mn-Zn ferrite prepared using combustion method, and Consequences of Nd+3 doping on structural and electrical parameters of Manganese Zinc ferrite nanoparticles.

FRESHER'S PARTY!

The Third Year students of the Department of Physics organized an 80s themed Fresher's party on November 27, 2021 at 02:30 pm in the Lower Auditorium. The party began with a remarkable entrance and introductions ensued. The music and games kept the First and Second years engaged. The staff members and the students received tokens of appreciation.

Subject Talk

"Brain inspired memory for next generation computation"

Speaker
Prof. E. S. Kannan
Associate Professor
Department of Physics
BITS, Pilani

Date: December 17, 2021

Time: 02:30 pm

Recent Advancements in Physics

Manifestation of Pauli blocking observed in ultracold fermionic gases

Pauli exclusion principle in ultracold atomic gases, was observed for the first time, by three independent research groups. First team, at JILA were observing the angles at which photons scattered from their ultracold gas of strontium-87 atoms. Meanwhile, The second team in New Zealand from University of Otago, aimed to compare the optical properties of a potassium-40 fermionic gas with that of rubidium-87 gas. The third team, at MIT had cooled fermionic lithium-6 atoms to below the Fermi level. All three teams observed an increase in transparency of the gases used, except isotope of Rubidium (since it obeys Bose-Einstein statistics). Ultracold atomic gases are used in atomic clocks and components for quantum networks. This observation of Pauli blocking can open possibilities for improvement in the existing uses or, in the development in new applications.

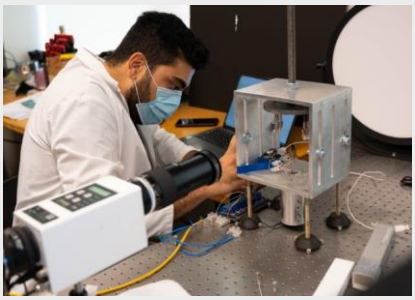
Blue blocker: Setup used by team at JILA
Courtesy: Physics World

Physics World: Pauli blocking is spotted in ultracold fermionic gases

Nanomaterials addition in fuel found to help increase its efficiency

Researcher Sepehr Mosadegh and his colleagues, over at University of British Columbia Okanagan Campus and Zentek, discovered that simple nanoparticle addition to a hydrocarbon fuel, can bring about a significant change in it's combustion characteristics.

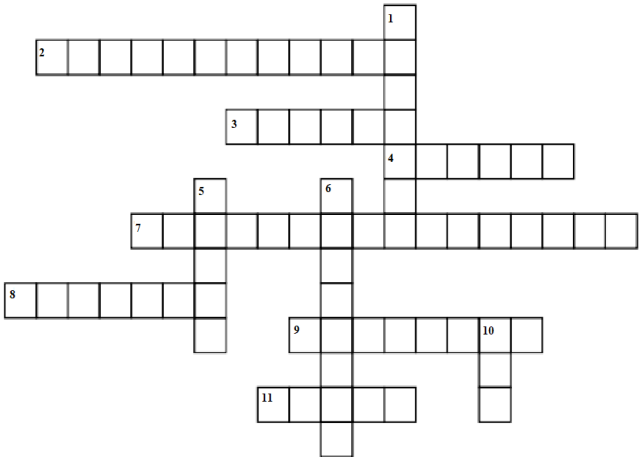
Mosadegh and his colleagues' focus was to observe how nanoparticles enhance atomization in liquid fuels, also the ignition delay, rate at which the fuel burned, and the speed atomization of ethanol. The group found out that in best case burning rate was increased by 8.4% by increasing nanoparticle concentrations to 0.1%, and using reduced graphene oxide as the dopant. These results show potential for creation and use of low carbon emission, high efficiency hydrocarbons as a fuel source.



Sepehr Mosadegh running tests to observe burn rate and ignition delay of the doped fuel
Courtesy: Physics World

Physics World: Nanoparticles in fuel could boost aircraft efficiency

CROSSWORD PUZZLE



Down:
1. Natural tendency of the object to resist change in motion
5. SI unit of frequency
6. _____ is equal to the mass of the object times its velocity.
10. unit of electrical resistance

Across:
2. second-order derivative of displacement
3. Quantity with both magnitude and direction
4. _____ is the measure of the force that can cause an object to rotate about an axis
7. the study of electricity and magnetism and their interactions with each other
8. _____ force is experienced by an objected immersed partially on completely in fluid
9. metric unit of length equal to 10^{-10} m
11. SI unit of energy