

# SOLAR ECLIPSE

As a part of celebrating the annular solar eclipse our UG and PG students visited nearby schools and arranged classes related to solar eclipse. We also made arrangements for the public for viewing solar eclipse

The annular solar eclipse started at 8.04AM on 26.12.19, but the necessary arrangements (the dark room set up built with a pin-hole camera within) to capture the annular solar eclipse were done from 6am at the college ground by the MSc students and teachers of the department. The Resource persons from IIST, as promised earlier, reached the venue by 7AM to make the arrangements to view the eclipse, by projecting the captured image of the sun on a big screen.

By 7.30AM, public started to reach the venue to view the same, and by 7.45AM we could get a clear view of the sun on the screen. The various phases of the eclipse could be seen on the screen, and at the same time, Dr. Sarita Vig (IIST) explained in detail about the same. She also described about eclipses in general, why one should not view the eclipse through naked eyes, and so on. As there was public involvement, so as to make clear the phenomenon happening, everything were correspondingly translated for them. By 9.27AM, the annular solar eclipse reached its maximum, and we could see the “rings of fire” on the screen. The view was so beautiful and serene.

In order to abandon the various mis-conceptions, and superstitions in relation with the solar eclipse, we distributed “PAYASAM” at the peek time of eclipse. By 10AM we put a closure to public event.

# OZONE DAY CELEBRATIONS

The Inaugural function started at 10.00am with the welcome address of Smt. Preethi Rajan M K, HOD of Physics. The function was Chaired by Dr. Sreenivas P C, Principal, Payyanur College and was inaugurated by Dr. Manoj K, HOD of Environmental Studies, Kannur University. Ramachandran Master, President, PES and Dr. Santhosh V. M, Co-ordinator, IQAC delivered the felicitations. Mr. Vinodkumar T, Assistant Professor of Physics expressed the vote of thanks.

Morning Session included two talks:

- 1.”32 Years and Healing” by Dr. Manoj. K
- 2.”Semiconductor based Nanomaterials for Environmental Applications” by Dr. Baiju K Vijayan

There were a total of 130 participants. A poster competition, based on the theme 32 Years and Healing, was held in the afternoon. Botany Department bagged the first prize. Zoology Department and Physics Department got second and third prizes respectively.

# Insights 1.0 - International Webinar series on Physics

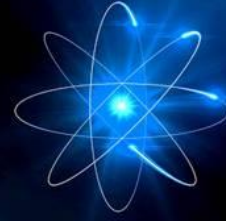
During the tiresome lockdown period, the Department of Physics conducted a webinar series by including the talks of some eminent scholars from different parts of the world. The first session commenced on 21<sup>st</sup> May 2020, and the second session was on 22<sup>nd</sup> May 2020. As per the convenience of the speakers the third and the fourth sessions were on 30<sup>th</sup> May 2020 and 31<sup>st</sup> May 2020 respectively. The webinar was attended by 100 participants plus 4 hosts/presenters. The objective of the webinars served both to disseminate the knowledge and to gather feedback and inputs on such activities and improvements for such future programs. As the core participants were decided to be the UG and PG students of various colleges, the topics were selected in such a way that the students will be well benefitted and they would come to know the recent trends in modern science. The webinar was inaugurated by our beloved Principal, Dr. Premachandran Kezhoth.

The speakers were,

1. Dr. Navaneeth P, Post-Doctoral Associate, Iowa state University, USA
2. Mr. Nithin Thomas, Research Scholar, University of Rogenzburg, Germany
3. Dr. Najeeb P K, Post Doctoral Fellow, Stockholm University, Sweden
4. Dr. Libu Manjakkal, Research Associate, University of Glasgow, UK

## SESSIONS

- ❑ PARTICLE PHYSICS – LEARNING TO DETECT THE UNSEEN  
Dr. NAVANEETH P., 10 A.M., 21-05-20
- ❑ THE ART OF VISUALIZING PHYSICS  
Mr. NITHIN THOMAS, 11 A.M., 22-05-20
- ❑ FUN WITH ATOMS & MOLECULES  
Dr. NAJEEB PUNNAKKAYATHIL, 3 P.M., 30-05-20
- ❑ METAL OXIDE BASED ELECTROCHEMICAL pH SENSORS  
Dr. LIBU MANJAKKAL, 3 P.M., 31-05-20



Register Here

<https://forms.gle/qpN8u03mytHv0hkd09>

Last date of application  
20-05-2020

e-Certificates  
will be provided

**A MAXIMUM OF 100  
APPLICANTS ARE ADMITTED**



**Dr. Navaneeth P**  
Post-Doctoral Associate  
Lowa State University, USA



**Mr. Nithin Thomas**  
Research Scholar  
University of Rogensburg, Germany



**Dr. Najeeb Punnaqqayathil**  
Post-Doctoral Fellow  
Stockholm University, Sweden



**Dr. Libu Manjakkal**  
Research Associate  
University of Glasgow, UK

### CONTACT

PRAKASH V 8547706706 | VINODKUMART 9496360819 | SREENITH E K 9048680121

Navaneeth is presenting

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Navaneeth

Sreejith Kaviyl

Manoj Kumar

Libu M Manjakkal is presenting

### Types of Electrochemical pH Sensor

**Potentiometric pH sensor:** Sensor consists of a combination of a sensitive and a reference electrode. Sensitivity in potentiometric based sensors is determined by the potential difference between RE and SE immersed in a solution of unknown pH using Nernstian relation.

**Capacitive/inductive/conductimetric pH sensor:** Exploits changes in electrical properties such as capacitance or impedance of a film deposited on interdigitated electrodes in response to the electrochemical reaction occurring at the solution-SE interface

**Chemi-resistive pH sensor:** The chemi-resistor and conductimetric based MOx pH sensors work by similar principle and they do not require a RE for their operation. The change in  $H_3O^+/OH^-$  ions in the solution generates a change in electrical properties, in particular changes in resistance and conductance of the SE material

**ISFET pH sensor:** ISFET is a type of potentiometric device which operates similarly to MOSFET. In ISFET, the gate is covered with an ion-sensitive layer and is placed between the source and drain. The current flowing between source and drain is controlled by the electrostatic field generated by the gate. In this method, instead of measuring the potential difference between the two sides of the glass membrane, the current passing through the transistor is recorded.

**EGFET pH sensor:** ISFETs are directly formed on the FET electrode, they also have several disadvantages such as device instability, hysteresis, low current sensitivity and sensitivity to light, etc. To overcome these drawbacks, In EGFET, where FET is isolated from the chemical solution as the sensitive film is deposited at the end of signal line extended from the FET electrode

00:23

Najeeb Pk is presenting

### Ion Storage ring experiments

Long periods of time : of the order of hours and days  
More feasibility to study the ion dynamics

Detector, Fast atoms after detachment, Laser, Injected ions, Switched deflector for ion injection, Stored ions

00:30

Meeting interface showing a whiteboard with a differential equation and annotations.

Equation on the whiteboard:

$$\frac{d^2\psi}{dx^2} + \delta(x)\psi = -E\psi$$

Annotations:

- A bracket under  $\delta(x)\psi$  is labeled "Singularity".
- A bracket under  $-E\psi$  is labeled "Finite".
- A circled term  $-\delta(x)\psi(x)$  has an arrow pointing to the  $\delta(x)$  part of the equation, with the text "Inifinite at x=0".

Meeting controls and participants are visible on the right side of the screen.