

# **WEBINAR REPORT**

The webinar on “TERAHERTZ SPECTROSCOPY: FORBIDDEN GAP TRANSFORMING INTO ADVANCED APPLICATIONS” was organized by Dr. A. Inigomary Rita, Head of the Department of Physics, Dr. V. Vasumathi and Dr. A. Jennifer Christy, Assistant Professors of Physics, PG and Research Department of Physics, Holy Cross College (Autonomous), Tiruchirappalli on 9<sup>th</sup> June 2020. Dr. Kamaraju Natarajan, Assistant Professor, Department of Physical Sciences, IISER, Kolkata was the resource person. Dr. A. Inigomary Rita, Head of the Department welcomed the online gathering and introduced the speaker to the participants.

The speaker started his speech by quoting Einsteins’s words. Then he started talking about the importance of Terahertz in the region of electromagnetic spectrum. He pointed out why one needs such Terahertz spectrum in the application of real world. In the second part of his talk, he discussed the different types of analysis available in the Terahertz spectroscopy. He also presented some of his research results and discussed some of the important points. He showed his lab virtually where the Terahertz pulses are generated and he explained how one can investigate the materials using such spectroscopy. He concluded his session by mentioning major applications of Terahertz spectroscopy. Total number of Beneficiaries: 211 [193 Students + 18 Staff].

# E-INVITATION OF THE EVENT



## Holy Cross College (Autonomous)

Affiliated to Bharathidasan University  
Nationally Accredited (4<sup>th</sup> Cycle) with 'A<sup>++</sup>' Grade (CGPA 3.75/4) by NAAC  
College with Potential for Excellence

Tiruchirappalli-620 002, Tamilnadu, India

### PG & Research Department of Physics

Organizes a National Webinar on

## Terahertz spectroscopy: Forbidden gap transforming into an advanced application

9<sup>th</sup> June 2020 ✦ 4.00 pm



Dr. (Sr.) A. Christina Bridget  
Principal

Dr. A. Inigo Mary Rita  
Convener and Head

Dr. V. Vasumathi  
Dr. A. Jenifer Christy  
Organizers



**Speaker:**  
Dr. Kamaraju Natarajan  
Assistant Professor  
Department of Physical Sciences  
IISER Kolkata

E-Certificate will  
be issued for all  
participants

Registration:  
Use the QR code  
/ link



<https://forms.gle/M6cHfpiGKLdyKAVv7>

The meeting will be held through google meet and the link will be sent to the registered email

# SCREENSHOTS OF THE EVENT

**THz spectroscopy & its novel applications**

Probe and control low-energy excitations:

- Phonons
- Magnons
- Excitons
- conduction electrons
- Cooper pairs

THz spectroscopy

Optical Probe/Pump

THz Pump/Probe

$E = 2 \text{ MV/cm}$

$B = 0.66 \text{ T}$

Labels: Lattice, Spin, Charge, Excitation

Diagram showing a laser pulse (red) and a THz pulse (blue) interacting with a material.

(140)

N JAYALAKSHMI (You)

Kamaraju Natarajan

Josephine Usha Antony Raj

venkat ramanan

Also in the meeting (136)

**What is terahertz radiation?**

RF  $\mu$ -waves "THz gap" IR VIS UV X-R

Electronics Forbidden EM Gap in Spectroscopy Lasers (optics)

Frequency (Hz)

$\nu = 0.1 \text{ to } 10 \text{ THz}$   $\lambda = 3 \text{ mm to } 30 \mu\text{m}$

1 THz (300  $\mu\text{m}$ )  $\hbar\omega = 33 \text{ cm}^{-1}$  or 4.1 meV ( $\hbar\nu$ )

Diagram showing the electromagnetic spectrum with a red arrow pointing left (RF,  $\mu$ -waves, Electronics) and a purple arrow pointing right (IR, VIS, UV, X-R, Lasers (optics)). The "THz gap" is the region between  $10^{11}$  and  $10^{14}$  Hz.

(139)

N JAYALAKSHMI (You)

venkat ramanan

Inigo Rita

Also in the meeting (135)

**Material identification, Quality control, imaging, Surveillance**

Pharmacy

Bio Imaging

Explosives

Surveillance

(139)

N JAYALAKSHMI (You)

Kamaraju Natarajan

Josephine Usha Antony Raj

venkat ramanan

Also in the meeting (135)

**Ultrafast & THz Lab @ IISER Kolkata, India**

@ IISER Kolkata from July, 2016

**Research Interests:**  
Ultrafast dynamics in condensed matter systems using femtosecond pump-probe spectroscopy and time and frequency resolved terahertz (THz) spectroscopy. Some examples of excellent candidates to use THz and femtosecond pulses are 2D systems like 2D/3D/2D layered materials, topological systems, solar cells, strongly correlated systems and artificially created metamaterials.

(136)

N JAYALAKSHMI (You)

Kamaraju Natarajan

Inigo Rita

Also in the meeting (132)

**THz Control**

**Static elements:** e. g. lenses, polarizers, waveplates, fibers

**established**

Si lenses    polarizers    Metallic mesh-filters    Quartz-natural birefringence

**Metal-mesh optical filters** are optical filters made from arrays of metal nanowires and detectors.

- Parameters like focal length, birefringence are fixed
- Changing the parameters means fabricating a new device

(138)

Aparna Anand 4 mins  
dr.aparnavnair@gmail.com, M.phil Holder, Christ University, Bengaluru

Aparna V Nair

hajasheriff hanifa 1 min  
Fine presentation

Madhanraj Rajendran Now  
Nice presentation

You Now  
Wonderful explanation sir thank you Sir

Send a message to everyone here

# **WEBINAR REPORT**

The Webinar on “LASER AND MATERIAL INTERACTION FOR ENGINEERING AND APPLICATIONS” was organized by Ms. A. Maria Bernadette Leena and Ms. I. Mary Clementia, Assistant Professors of Physics, PG and Research Department of Physics on July 28<sup>th</sup> 2020 through Google Meet platform. The webinar convener was Dr. A. Inigomary Rita, Head of the Department of Physics and Rev. Sr. (Dr.). A. Christina Bridget, Principal, Holy Cross College (Autonomous), Tiruchirappalli presided over the session. The resource person was Lt. Dr. A. Viswanathan, Assistant Professor, Department of Physics, Anna University-Bit Campus, Tiruchirappalli.

Dr. Inigomary Rita. A, Head of the Department of Physics, welcomed the online gathering and introduced the speaker to the participants. The speaker started his talk with the fundamentals of Laser- Material interactions with the interaction of electromagnetic radiation with matter and how this interaction affects the optical properties of the materials. He also discussed deeply about the development of new laser types, ranging from continuous wave (CW) lasers to Atto-second pulse lasers. Illustrative calculation for the evolution of the normalized temperature with time for various depths for a temporally rectangular laser pulse was also discussed. Total number of Beneficiaries: 243 [225 Students + 18 Staff].

# E-INVITATION FOR THE EVENT



## Holy Cross College (Autonomous)

Affiliated to Bharathidasan University  
Nationally Accredited (4th Cycle) with A++ Grade (CGPA 3.75/4) by NAAC  
College with Potential for Excellence  
Tiruchirappalli – 620 005, Tamil Nadu, India

### PG AND RESEARCH DEPARTMENT OF PHYSICS ORGANIZES A WEBINAR ON LASER & ITS MATERIAL INTERACTION FOR ENGINEERING APPLICATIONS



July 28, Tuesday



11.00 am - 12.30 pm



Presided by  
**Dr.(Sr). A. Christina Bridget**  
Principal

**RESOURCE PERSON**  
**LT. DR. A. VISWANATHAN**  
ASSISTANT PROFESSOR  
DEPARTMENT OF PHYSICS  
ANNA UNIVERSITY –BIT CAMPUS,  
TRICHIRAPPALLI



Platform: Google Meet

**Convenor**  
**Dr.A.Inigo Mary Rita**  
Head- Department of Physics

**Organizers**  
**A.Maria Bernadette Leena**  
**I. Mary Clementia**  
Assistant Professors of Physics

\* This webinar is exclusively for the Physics students of HCC , Trichy

\* Do not forward this invite to other Colleges and Students

Registration link  
<https://forms.gle/FZYrjXbuSP8JrwVi7>

# SCREENSHOTS OF THE EVENT

Meeting details

People (74)

Chat

OK thank you mam

Ammu 1114 12:39  
Thank you mam

pratheepa pratheepa 12:39  
Thank you mam.

YUVASRI BARATHI 12:40  
Thank you mam

Praveena Beena 12:40  
Thank you mam

tamil ezhilackia 12:41  
Thank you mam

Fathima Lincy 12:41  
Thank you teachers

Jasmin Banu 12:43  
How optimization can be done for laser drilling?

Send a message to everyone

12:45

Alagan is presenting

## Laser Shock Peening (LSP)

Transparent overlay usually water

Laser pulse

Lens

Plasma

Absorbent coating

Shock wave

Metal target

Schematic illustration of LSP

Water curtain (containing medium)

Plasma Pressure

Laser Beam

Shock Wave

Plagi (relative motion)

Meeting details

People (88)

Chat (3)

valsu vaisu

Vasumathi v

Vasunthra Ptv

Vinitha Venkatachalam

vinofia

Viswanathan Alagan (Presenta...)

Viswanathan Alagan

Viyani Xavier

yalvizhi 4599

Yesodhini Balasundaram

YUVASRI BARATHI

ENG 12:36 28-07-2020

Viewanathan Alagan is presenting

## Einstein Coefficient cont...

### Stimulated Emission

$$n_{st} \propto N_2 e(v)$$

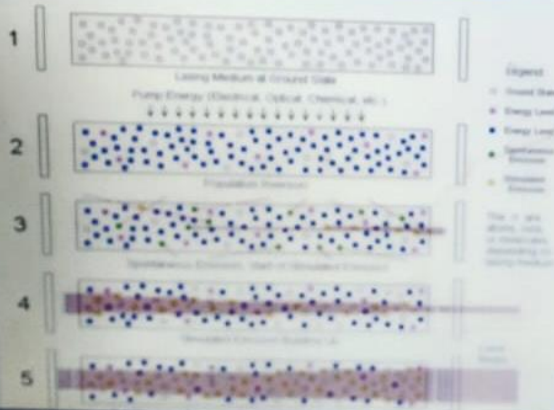
$$n_{sp} = B_{21} N_2 e(v)$$

Where

- $B_{21}$  is Einstein coefficient for stimulated emission, or stimulated emission probability per unit time per unit energy density ( $m^3 \text{ Hz} / \text{J} \cdot \text{s}$ ).

Joe And has left the meeting

## Basic Laser Operation



### Meeting details

Project 1000 Clear

Monday, December 11, 2024  
good meeting overall

A. Gokul 11:11  
Good meeting, important decisions

Aravind 11:11  
Good meeting overall

NEENA 11:11  
Good meeting, important decisions

Aravind 11:11  
Good meeting overall

A. 11:11  
Good meeting overall

Aravind 11:11  
Good meeting overall

Aravind 11:11  
Good meeting overall

A. Gokul 11:11  
Good meeting overall

Aravind 11:11  
Good meeting overall



# WEBINAR REPORT

The webinar on “NANOSCIENCE: PRESENT AND FUTURE PROSPECTS” was organized by Dr. A. Inigomary Rita, Head of the Department of Physics , Ms. A. Jasmin Banu and Ms. S. Babiyana, Association Secretaries, PG and Research Department of Physics, Holy Cross College (Autonomous), Tiruchirappalli on 29<sup>th</sup> September 2020 through Google Meet platform.

The webinar began with an invocation song soliciting the grace of God. Dr. M. Kumaresavanji, PI, Nanomaterials Laboratory, Department of Physics, National College (Autonomous), Tiruchirappalli was the resource person. The resource person initiated the virtual handing over ceremony and wished good luck to the newly elected student association leaders of the academic year 2020 – 2021. The following association leaders, Ms. I. Arthi Maria Flora of II M.Sc. Physics, Ms. G. Dharani of I M.Sc. Physics, Ms. J. Martina Evangelin of III B. Sc. Physics, Ms. K. Karpagambigai of II B. Sc Physics and Ms. T.R. Avanthica of I B. Sc Physics took their oath to work hard for the upliftment of the department and the students community. Dr. M. Kumaresavanji started his presentation by exploring the scale of universe that took the participants on a ride down to the smallest thing theorized by various scientists. He discussed about the nanoparticles, nanotubes, nanowires based on its dimensions. He spoke about the allotropes of carbon, optical behavior of gold nanoparticles and explained about the preparation of nanotubes by sol-gel method. The overall session focused on the significance of Nanomaterials and applications. Finally he concluded the session on how nanomaterials would take a different dimension in the future which was an eye opener to the participants. Total number of Beneficiaries: 237 [225 Students + 12 Staff].

# E-INVITATION OF THE EVENT



## Holy Cross College (Autonomous)

Affiliated to Bharathidasan University  
Nationally Accredited (4<sup>th</sup> Cycle) with A++ Grade (CGPA 3.75/4) by NAAC  
College with Potential for Excellence  
Tiruchirappalli – 620 002, Tamil Nadu, India

### PO AND RESEARCH DEPARTMENT OF PHYSICS

Organizes

*A webinar on*

## NANOSCIENCE: PRESENT & FUTURE PROSPECTS

Join us on



**Resource Person**

**Dr. Kumaresayanji. M**

Assistant Professor  
PI, Nanomaterials Laboratory,  
Department of Physics,  
National College (Autonomous),  
Tiruchirappalli



<http://meet.google.com/trv-goth-ywg>



**Presided by**

**Dr. (Sr). Christina Bridget. A**

Principal, Holy Cross College (Autonomous),  
Tiruchirappalli

*Organizers*

**Dr. Inigomary Rita. A**

Head of the Department of Physics

**Ms. Jasmin Banu. A**

Assistant Professor of Physics

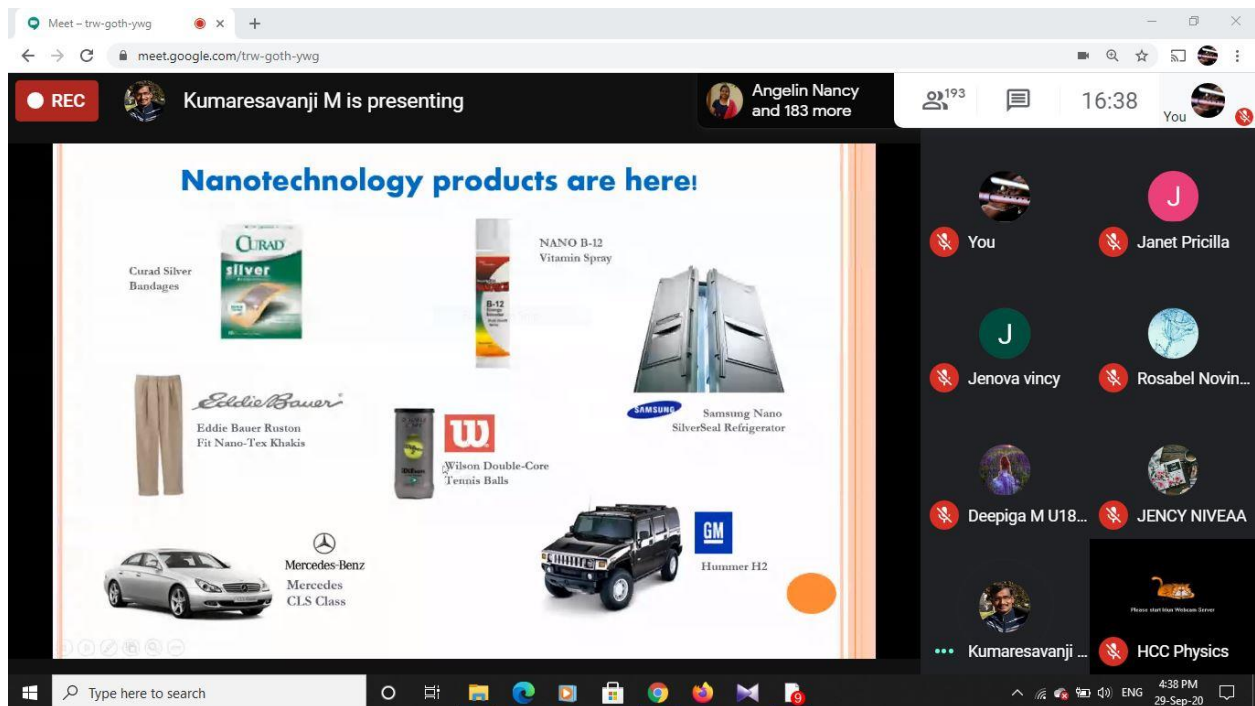
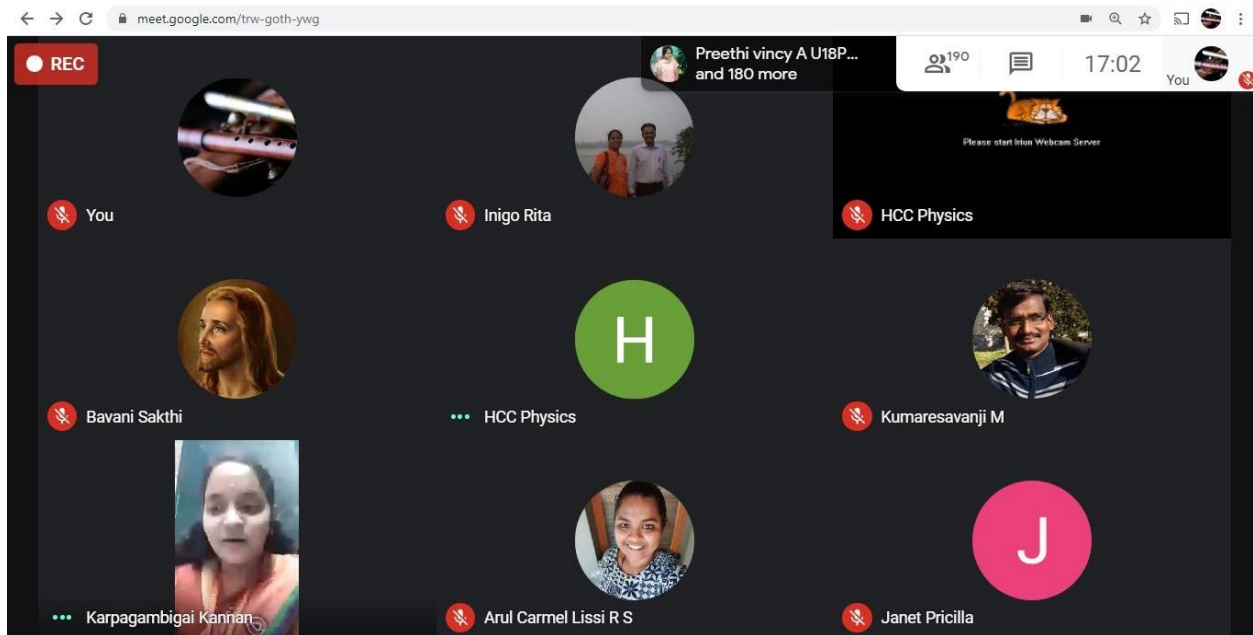
**Ms. Babiya. S**

Assistant Professor of Physics

\* Exclusively for the Staff members & Students of the Department of Physics ONLY

\* Do not forward this invite to other colleges & students


# SCREENSHOTS OF THE EVENT



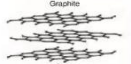
meet.google.com/tw-goth-ywg?pli=1&authuser=0

REC Kumaresavanji M is presenting


## Allotropes of Carbon




Diamond




Graphite



fullerene



nanotube



graphene

**Graphite :**

- ✓ very soft material
- ✓ not elastic
- ✓ good electrical conductor

**Graphene:**

- ✓ one of the strongest materials
- ✓ excellent tensile strength
- ✓ transparent material
- ✓ good electrical conductor

**CNTs**

- ✓ resistant to high temperature
- ✓ highly elastic and bend without breaking
- ✓ 20 times stronger than steel
- ✓ good electrical and heat conductor
- ✓ exhibit magnetoresistance nature

**C<sub>60</sub>**

- ✓ high electron affinity
- ✓ hydration and dehydration

Meeting details

People (190) Chat

thank you mam

G. Dharani Physics 16:17  
THANK YOU MAM

Arthi maria19 16:18  
Thanks you mam

HCC Physics 16:18  
Good Evening sir

Yes sir

HCC Physics 16:35  
Yasmin monika mute your audio

Send a message to everyone


REC

ROSELIN JEYAS... and 180 more


190 17:03 You

Please start your Webcam Server


You




Inigo Rita




HCC Physics




Gobika U18PH014




HCC Physics




Kumaresavanji M




Karpagambigai Kannan







Arul Carmel Lissi R S



Janet Pricilla

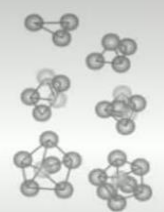

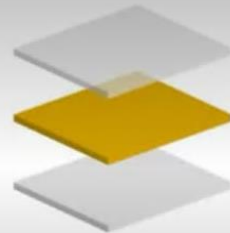



## Materials by their dimension

			
Nanoparticles 0D	Nanowires and Nanotubes 1D	Thin Films 2D	Bulk 3D
No dimensions at macroscale	One dimension at macroscale	Two dimensions at macroscale	Three dimensions at macroscale

Webinar on Nanoscience

## Materials by their dimension

			
Nanoparticles 0D	Nanowires and Nanotubes 1D	Thin Films 2D	Bulk 3D
No dimensions at macroscale	One dimension at macroscale	Two dimensions at macroscale	Three dimensions at macroscale

REC

Participants: You, Kumaresav..., Inigo Rita

meet.google.com/trw-goth-ywg?pli=1&authuser=0

REC Kumaresavanji M is presenting Janet Pricilla and 179 more 189 16:20 You

scaleofuniverse.com

Home The Most Astounding Fact Powers of Ten The Known Universe Scale Model of Solar System Alone in the Night

Andromeda 2095 Star Sizes Journey to the Universe Edge Universe is Way Bigger than You News Facebook

### The Scale of the Universe

## Giant Earthworm

Meter (m) (Diameter) 10<sup>0</sup> meters

Human 1 m

Dodo Bird

Rafflesia

Beach ball

10<sup>0.0</sup>

Meeting details ^

Turn on captions Kumaresavanji M is presenting

Type here to search

4:20 PM 29-Sep-20

REC

**The Economist**

Robin Coking

### Why Swedes are inserting microchips into their bodies

No more worries about losing your wallet – but plenty about privacy

Sweden sees microchip implant revolution

Microchip technology is getting under the skin of thousands of Swedes.

by Paul Rhye

**7 DAYS**

### Microchip in hand allows you to pay for goods in UAE

It might sound like something from a dystopian science fiction fantasy but you could soon be able to pay for goods and services with a microchip that is embedded in your hand, according to Etisalat officials.

The UAE telecom giant unveiled some implantable microchips, which store all your credit card, ID and business card data inside, for the first time in the Middle East at GITEX 2019 in Dubai.

You

REC Kumaresavanji M is presenting Linda Arocma and 175 more 16:22 You

Home The Most Astonishing Fact Powers of Ten The known Universe Scale Model of Solar System Alone in the Night  
Andromeda 2094 Star Sizes Journey to the Universe Edge Universe Is Way Bigger than You News Facebook

### The Scale of the Universe

Wolf 359 TrES-4 Saturn Gliese 229

Mercy God has left the meeting

Meeting details Meeting controls (mute, video, chat)

Snip saved to clipboard Select here to mark up and share the image

Participants: You, Kumaresavanji..., HCC Physics, Inigo Rita

REC **Optical behaviour of Au nanoparticles**

20 nm	30 nm	40 nm	50 nm	60 nm	70 nm	80 nm
Red	Red	Red	Red	Pink	Pink	Pink

Meeting controls (back, forward, search, etc.)

Participant: You (H)

# WEBINAR REPORT

The webinar on “ASTRONOMY: EXCITEMENT, CHALLENGES & OPPORTUNITIES” was organized by Ms. A. Inigomary Rita, Head of the Department, Ms. A. Jasmin Banu and Ms. S. Babiya, Association Secretaries, PG and Research Department of Holy Cross College (Autonomous), Tiruchirappalli on October 14<sup>th</sup>, 2020 through Google Meet Platform. The resource person was Dr. C. Stalin, Professor, Indian Institute of Astrophysics (IIA), Bangalore.

The session began with a prayer song and Ms. I. Arthi Maria Flora of II M.Sc. Physics delivered the welcome address. For the very first time, the PG and Department of Physics launched its maiden magazine “MAGPHY 2020” teaser. The innovative idea of MAGPHY 2020 magazine was introduced to tap the potentials of the students in the field of Physics and to provide a platform to exhibit their innovative ideas in the form of articles (e.g.: Essay, Cartooning, Pencil Sketching, Painting, Poem, Puzzles, Riddles, Memes etc.,).

The teaser of MAGPHY 2020 was released by the Chief Guest, Dr. C. Stalin, Professor, Indian Institute of Astrophysics (IIA), Bangalore and he appreciated the students’ contribution of various forms of articles towards the magazine. The speaker started his speech by giving an introduction on Astronomy, Astrophysics and Astronomers followed by the importance of astronomical research in industries and study of objects in the Universe. He spoke about the various challenges and opportunities available in the field of astronomy and astrophysics. Dr. C. Stalin also encouraged the students to take up research in the field of astrophysics. A total of 237 [225 Students + 12 Staff] participants attended the webinar with great enthusiasm.



# E-INVITATION OF THE EVENT



## HOLY CROSS COLLEGE (AUTONOMOUS)

Affiliated to Bharathidasan University  
Nationally Accredited (4th Cycle) with  
A++ Grade (CGPA 3.75/4) by NAAC  
College with Potential for Excellence

TIRUCHIRAPPALLI

### PG & RESEARCH DEPARTMENT OF PHYSICS

*Organizes a webinar on*

# ASTRONOMY

EXCITEMENT, CHALLENGES & OPPORTUNITIES



DR. C.S. STALIN  
Professor, IIA, Bangalore

*Join Us On*



<https://meet.google.com/nkx-nsym-irg>

**OCTOBER 14, 2020 @ 4:00 PM**

#### *Organizers*

Ms. A. Jasmin Banu  
Assistant Professor of Physics

Ms. S. Babiyana  
Assistant Professor of Physics

**Dr. A. Inigomary Rita**  
Head of the Department of Physics

**Dr. (Sr). A. Christina Bridget**  
Principal



## HOLY CROSS COLLEGE (AUTONOMOUS)

Affiliated to Bharathidasan University  
Nationally Accredited (4th Cycle) with  
A++ Grade (CGPA 3.75/4) by NAAC  
College with Potential for Excellence  
Tiruchirappalli

### PG & RESEARCH DEPARTMENT OF PHYSICS

*Releases the Teaser of*

# MAGPHY 2020

RESOURCE PERSON

DR. C.S. STALIN

Professor, IIA, Bangalore

*Join Us On*



<https://meet.google.com/nkx-nsym-irg>

OCTOBER 14, 2020 @ 4:00 PM

Ms. A. Jasmin Banu

*Organizers*

Ms. S. Babiyana

Assistant Professor of Physics

Assistant Professor of Physics

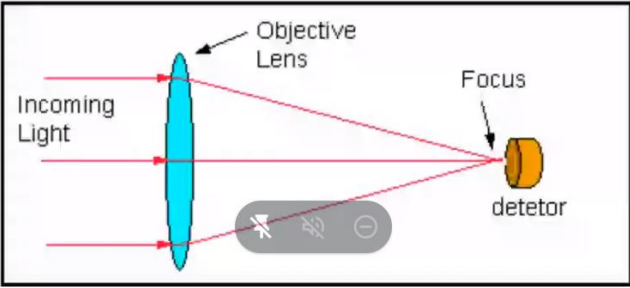
Dr. A. Inigomary Rita  
Head of the Department of Physics

Dr. (Sr). A. Christina Bridget  
Principal

# SCREENSHOTS OF THE EVENT

REC Janaki Stalin is presenting Roja Sri and 95 more 5:02 PM You

## Refracting telescope



The diagram illustrates a refracting telescope. On the left, three parallel red lines represent 'Incoming Light' rays. These rays pass through a blue convex 'Objective Lens'. The rays converge and meet at a point labeled 'Focus' on the right. A yellow cylindrical 'detetor' is positioned at the focus point. A small grey control bar with a minus sign is visible below the lens.

1. Use two glass lenses to focus light
2. Lenses are in a convex shape, which bend light inwards to make the image
3. Need bigger lenses and larger distances between the two lenses (focal

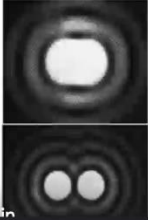
Meeting details Meeting controls: Mute, Video, Screen Share, Turn on captions, Janaki Stalin is presenting

REC

## Resolution of eye

In Astronomy we use degrees for large angles, arcmin (1/60 of a degree) and arcsec (1/3600 of a degree) for small angle. We can also find the linear separation between objects on the sky

Angular resolution of Eye indicates the sharpness of the image, i.e, the smallest angular separation that two stars can be discernible


$$R = 1.22 * \lambda / D$$

$D = 2.5 \text{ mm}$   
 $\lambda = 500 \text{ nm}$   
 $R = 0.00024 \text{ radian}$

Janaki Stalin Rosabel Novinsha joined

Participants: You, ROSELIN, Janaki, 92 others


REC Janaki Stalin is presenting Jerriyapricilla Amirt... and 94 more 4:52 PM You

Press Esc to exit full screen

## Astronomy: Study of objects in the Universe

1. Where do we fit in the history of the Universe (time)
2. Where are we in the Universe (space)

Space ride to see the different kinds of objects that fill the Universe




Meeting details Meeting controls: Turn on captions, Janaki Stalin is presenting

4:58 69%

REC

## Physics Nobel prize in the year 2020

R. Genzel A. Ghez R. Penrose



Rogen Penrose: Black hole formation is a robust prediction of the general theory of relativity  
 Reinhard Genzel & Andrea Ghez: Discovery of massive compact object at the centre of our Galaxy

Janaki Stalin  
 Mary Minolia.E U18PH032 left

Meeting controls: You, ROSELIN, Janaki, 93 others

REC Janaki Stalin is presenting S Suganthi M and 98 more 101 4:48 PM You

trichy.pdf - Adobe Reader Press Esc to exit full screen

### Uses of Astronomical Research

**Short term:** Nil  
**Long term:** Technology, Economy, Society

**Day to day applications**

1. Development of optics and electronics has become essential for day to day applications

**Survival of species**

1. Sun's influence on Earth's climate change
2. Dynamics of solar system objects (threats from meteorites)
3. Defence satellites: mainly telescopes pointed towards the Earth

**Industry**

1. Kodak film, Initially for astronomy, but now in medical field
2. CCDs (cameras, mobile phones, webcams)
3. Radio astronomy: communication, data processing

**Software**

Tools Sign Comment

- Export PDF
- Create PDF
- Send Files
- Store Files

Acrobat.com

Store and access PDF and other documents from multiple devices. Learn More

Save

Open Acrobat.com Files

Meeting details ^



Turn on captions

Janaki Stalin is presenting





***TO BE CONTINUED....***

**MAGPHY- 202**

coming soon...

# **WEBINAR REPORT**

The webinar on “NOVEL MATERIALS AND ITS APPLICATIONS” was organized by Ms. A. Inigomary Rita, Head of the Department of Physics and Ms. N. Jayalakshmi, Association Secretary, PG and Research Department of Holy Cross College (Autonomous), Tiruchirappalli on 8<sup>th</sup> October 2020. The webinar started with a prayer song. Then the newly elected Association Secretaries were introduced to the gathering and they were congratulated by the Resource Person and Head of the Department. The guest speaker of the day was Dr. P. Jaikumar, Assistant Professor, PG & Research Department of Physics, National College (Autonomous), Trichy. He explained about the importance of material science, nanoscience and thin film. He listed the various applications of crystals, nanomaterials, metals and alloys, superconductors and ceramic materials. He concluded his lecture by talking about the significance of research in the field of material science. About 110 students and 12 staff attended this webinar through Google Meet Platform.

# E-INVITATION OF THE EVENT



## PG & RESEARCH DEPARTMENT OF PHYSICS HOLY CROSS COLLEGE (AUTONOMOUS)

Affiliated to Bharathidasan University  
Nationally Accredited (4<sup>th</sup> Cycle) with A++ Grade (CGPA 3.75/4) by NAAC  
College with Potential for Excellence  
Tiruchirappalli - 620 002, Tamil Nadu, India.

*Organizes a Webinar on*

## *Novel Materials and its Applications*

*Resource Person*



**Dr. P. Jaikumar**

M.Sc., M.Phil., M.Ed., PGDCA., Ph.D. (SET)  
Assistant Professor  
PG & Research Department of Physics  
National College (Autonomous), Tiruchy - 01

*President By*



**Dr. (Sr.) A. Christina Bridget**

Principal  
Holy Cross College (Autonomous)  
Tiruchy - 02

*Organizers*

**Dr. A. Inigomary Rita**

Head, PG & Research Department of Physics

**Ms. N. Jayalakshmi**

Assistant Professor  
PG & Research Department of Physics



**8<sup>th</sup> October 2020**  
**4.00 p.m.**

*Join Us @*

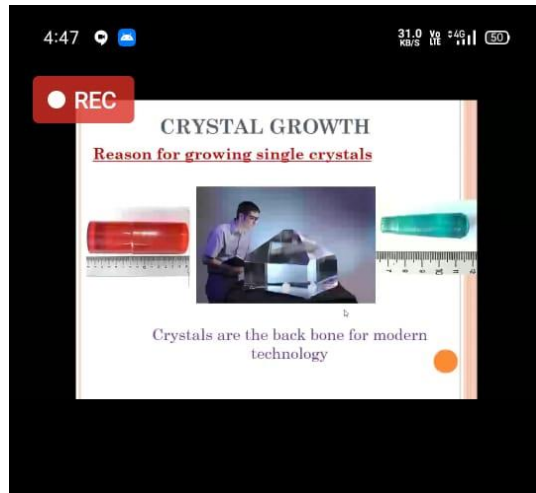


<https://meet.google.com/rxa-nwas-grq>

\* Exclusively for the Staff & Students of the PG & Research Department of Physics Only  
\* Do not forward this invite to other colleges & students



# SCREENSHOTS OF THE EVENT



(102)

Vinofia S (You)

Dr. Jaikumar Phy >

HCC Physics >

Dr. Jaikumar Phy >

Also in the meeting (98)



● REC

Used in quartz watches

Frequency conversion devices

Artificial diamonds

Single Crystal - Possible Applications

Laser cutting tools

In the field of Solar Cells

Light Emitting Diodes (LED)

You

● REC

## THIN FILM - MATERIALS !!!!!

- A thin film is a layer of material ranging from fractions of a nanometer to several micrometers in thickness
- Thin = less than about one micron ( 10,000 Angstroms, 1000 nm) film = layer of material on a substrate
- Condensation of atom by atom on the surface of any support material (substrate)
- (if no substrate, it is a "foil")

You

● REC

## APPLICATION OF METALS AND ALLOYS

विद्यया विन्दते

- ✓ Due to Their electric properties they are used in electric wire and Electrical devices .
- ✓ Stainless steel alloy is milled into coils, sheets, plates, bars, wire, and tubing to be used in cookware, hardware , surgical instruments.
- ✓ Brass can be used for the metallic coatings of several lock ,Watch etc.

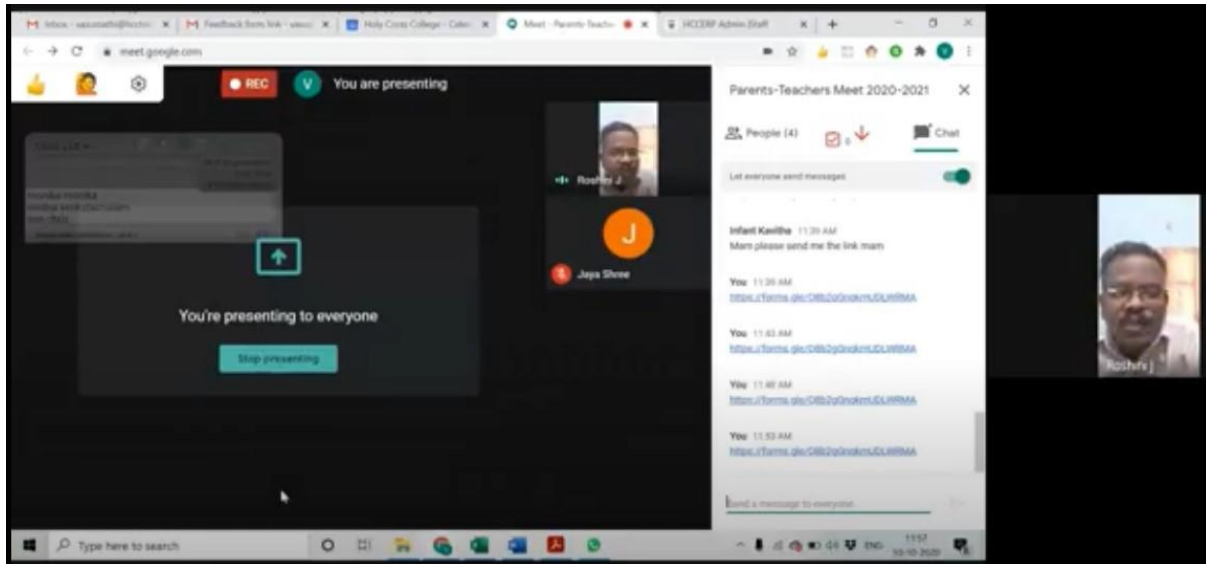
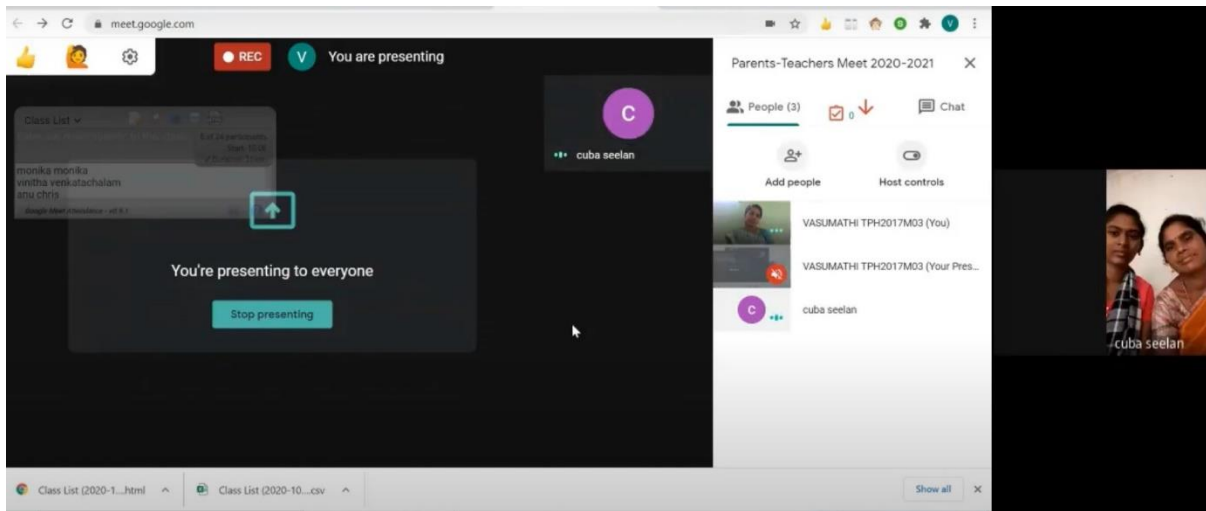
You

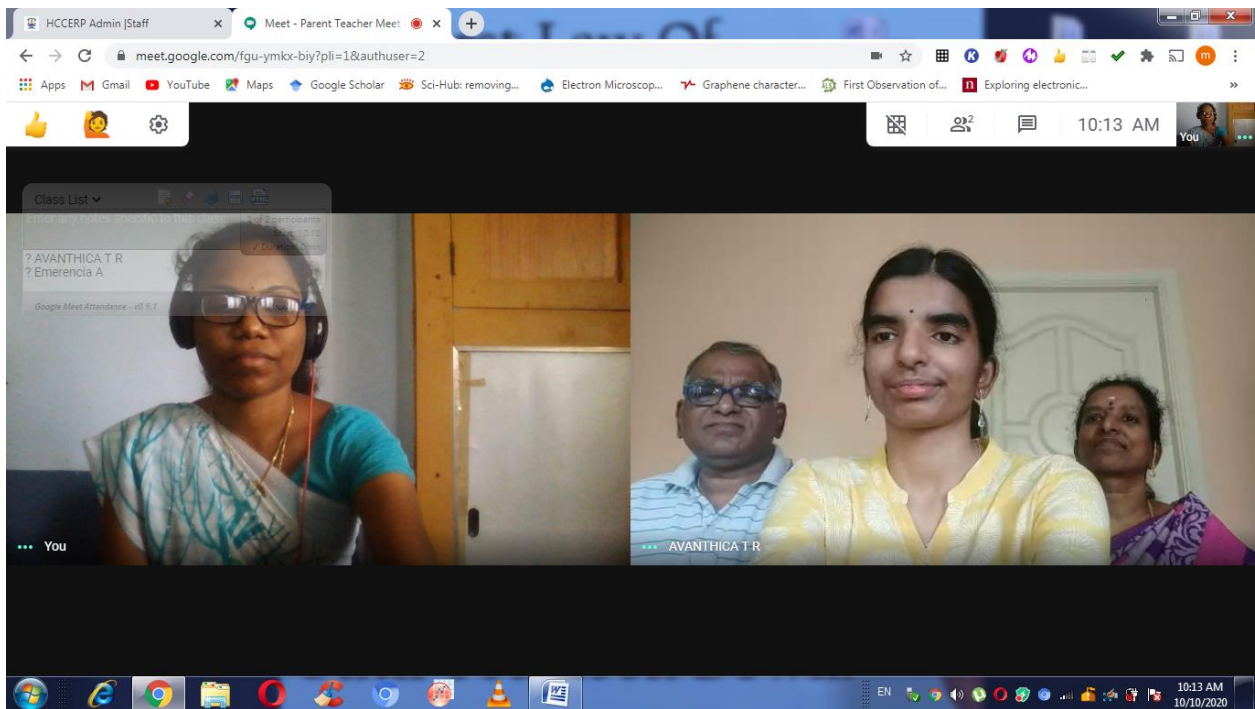
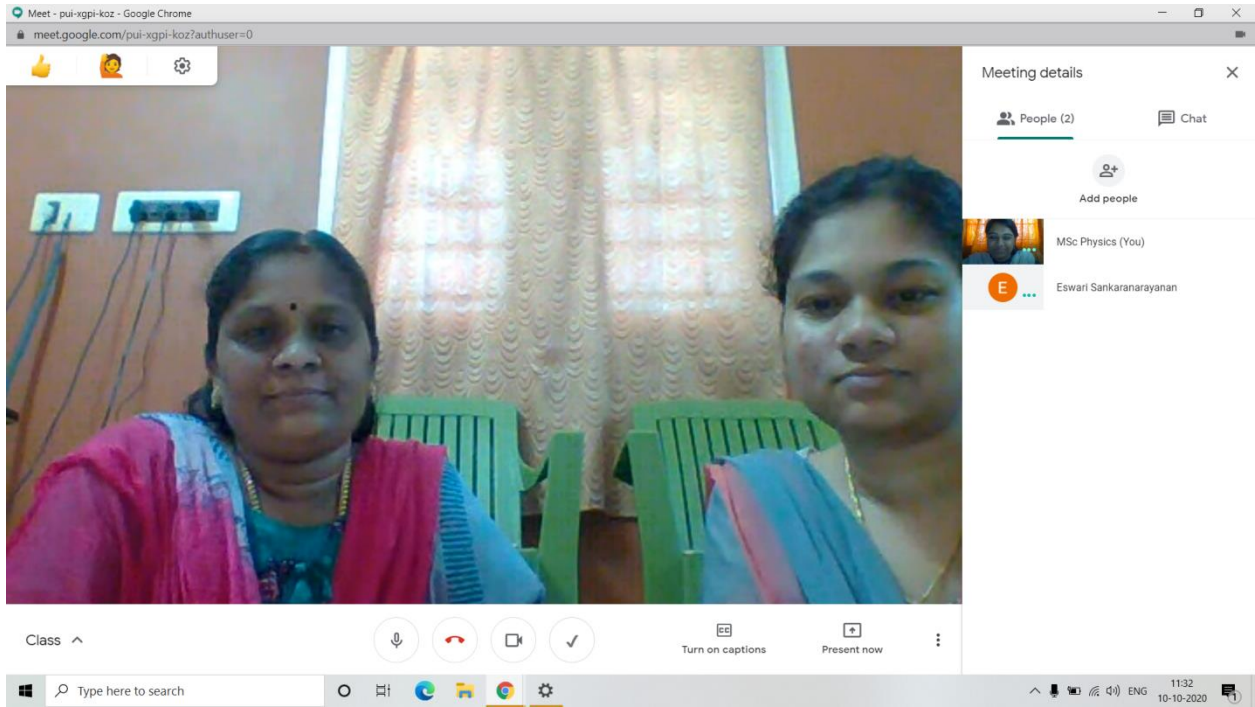
# **REPORT - PARENT TEACHER MEETING**

**2020 - 2021**

PG & Research Department of Physics, Holy Cross College, Trichy, organized the Parent Teacher Meeting for I, II, III UG and II PG students on 10<sup>th</sup> October 2020 at 11.00 am for the academic year 2020 – 2021 through Google Meet platform to discuss about students' progress and performance. Around 165 parents participated in the PTA meeting. The feedback and suggestions from the parents were collected.

## **SCREENSHOTS OF THE PTA**





Browser tabs: (no subject) - hccphysics18@gm... Meet - Class

Address bar: meet.google.com/fiz-edfb-znf

Navigation bar: Apps, YouTube, XRD OF SILVER NET..., Ilayaraja Hits - Tam..., HiGrade, John Deere Lawn a..., ear, Gmail, Explore the Many

Header: Maria Leena is presenting

**HCCERP ERP**

Welcome  
A. Maria Bernadette Leena

**NATIONALLY RE ACCREDITED (4th CYCLE) WITH 'A-' - GRADE BY NAAC**  
(Affiliated to Bharathidasan University, Tiruchirappalli - 620 024)

Name: MERLIN JAYA KUMARY C  
Department: PHYSICS  
Programme: B.Sc. Physics

Roll No: 2018122  
Register No: U18PH024  
Class: B.Sc. Physics (A-Sec) - SEMESTER II

**I Internal Test (2018-2019)**

#	Part	Course Code	Course Title	Mark	Total	Course Teacher Remark
1	BT	U18PH5AC107	Atomic and Molecular Physics	28	30	
2	BT	U18PH5AC108	Classical and Quantum Mechanics	22	30	
3	BT	U18PH5AC110	Electromagnetics and Mathematical Physics	40	50	
4	BT	U18PH5AC101	Engineering Intel 6005	34	50	
5	BT	U18PH5AC103	Physical Science and Technology	18	25	

Pass: 21/05/2019 Fall 2018-19

Class Teacher Remark: \_\_\_\_\_  
Signature of the Class Teacher: \_\_\_\_\_

Signature of the HOD: \_\_\_\_\_

Video call participants:

- Maria Leena
- Merlin Jaya Kumary C

OS Taskbar: Windows taskbar with various application icons.

# **REPORT ON DOC FEST 2020**

DOC FEST 2020 was organized by Ms. A. Jasmin Banu, Ms. S. Babiyana and Ms. N. Jayalakshmi, Assistant Professors of Physics, PG and Research Department of Physics, Holy Cross College (Autonomous), Tiruchirappalli on 15<sup>th</sup> October 2020. The DOC FEST 2020, a documentary competition, was conducted in commemoration of the birth anniversary of Dr. A.P.J. Abdul Kalam.

Dr. A. Inigomary Rita, Head of the Department of Physics and Ms. I. Mary Clementia, Assistant Professor of Physics were the panel of judges for the DOC FEST 2020. A total of 42 participants (21 teams - 9 teams from 'A' section and 12 teams from 'B' section) took part in this competition and screened their documentary video based on the topic "JOURNEY OF THE MISSILE MAN – DR. A.P.J. ABDUL KALAM". DOC FEST 2020 turned out to be an excellent opportunity for the students to exhibit their talents and creativity through Information & Communications Technology (ICT). The judges congratulated all the students for their enthusiastic participation and encouraged them to keep up their spirit.

# RULES AND REGULATIONS

*Doc Fest 2020*

*Dr. A.P.J. Abdul Kalam*

REMEMBERING THE  
MISSILE MAN

KNOW THE RULES & REGULATIONS

- \*In Commemoration of Dr.A.P.J.Abdul Kalam, PG & Research Department Of Physics organizes a Documentary Competition on 15th Oct. 2020
- \*DURATION: 5 minutes (300 seconds)
- \*VIDEO FORMAT: MP4
- \*Two members per team. Any number of teams per class can participate in this Doc Fest 2020
- \*SUBMISSION DATE: 14th Oct. 2020
- \*Share your DOC. video thro' google drive to [physics@hcctrichy.ac.in](mailto:physics@hcctrichy.ac.in)



# E-INVITATION OF THE EVENT

In Commemoration  
of  
DR.A.P.J.ABDUL  
KALAM

PG & RESEARCH  
DEPARTMENT OF PHYSICS

ORGANIZES

A

*Doc Fest*  
*2020*

---

REMEMBERING THE  
MISSILE MAN

THURSDAY, OCTOBER 15TH, 2020 @ 4:00PM

# SCREENSHOTS OF THE EVENT



Meeting details ^



 Turn on captions

 AVANTHICA T R  
is presenting



Meeting details ^



 Turn on captions

 AVANTHICA T R  
is presenting



Meeting details ^



Turn on captions



*He received several Awards*



*Padma Bhudhan in 1981*

*Padma vibhushan in 1990*

# **WEBINAR REPORT**

The webinar on “MENSTRUAL CYCLE AND HYGIENE MANAGEMENT” was organized by PG and Research Department of Physics, Holy Cross College (Autonomous), Tiruchirappalli on December 7<sup>th</sup>, 2020 through Google Meet platform. The resource person was Dr. V. Vijaya, MBBS., DGO.,. The speaker started her presentation by highlighting the different stages involved in a female reproductive life cycle from Puberty to Menopause. She discussed about the different phases in a menstrual cycle and also recommended the students to maintain a period diary so that it would be helpful to analyse their regularity of periods.

Dr. V. Vijaya insisted about the proper usage of napkins and cloth and the importance of disposing it in a proper manner. She described about the struggles that each female undergoes during her menstrual cycle and the ways to tackle it. At last she ended up the session by giving a detailed explanation about Polycystic Ovary Syndrome (PCOS). More than 252 students and 18 staff participated with great enthusiasm and interacted with the speaker and clarified their doubts.

# E-INVITATION OF THE EVENT



**HOLY CROSS COLLEGE (AUTONOMOUS)**  
Affiliated to Bharathidasan University  
Nationally Accredited (4th Cycle) with  
A++ Grade (CGPA 3.75/4) by NAAC  
College with Potential for Excellence  
**TIRUCHIRAPPALLI**

**PG & RESEARCH**  
**DEPARTMENT OF PHYSICS**

*Organizes a webinar on*

**MENSTRUAL CYCLE &  
HYGIENE MANAGEMENT**



**RESOURCE PERSON**  
**Dr. V. Vijaya, MBBS., DGO.,**

*Join Us On*



<http://meet.google.com/mnh-ovam-pmh>

**DECEMBER 7, 2020 @ 3:00 PM**

*Watch live on*



*Organizers*

**Ms. A. Jasmin Banu**  
Assistant Professor of Physics

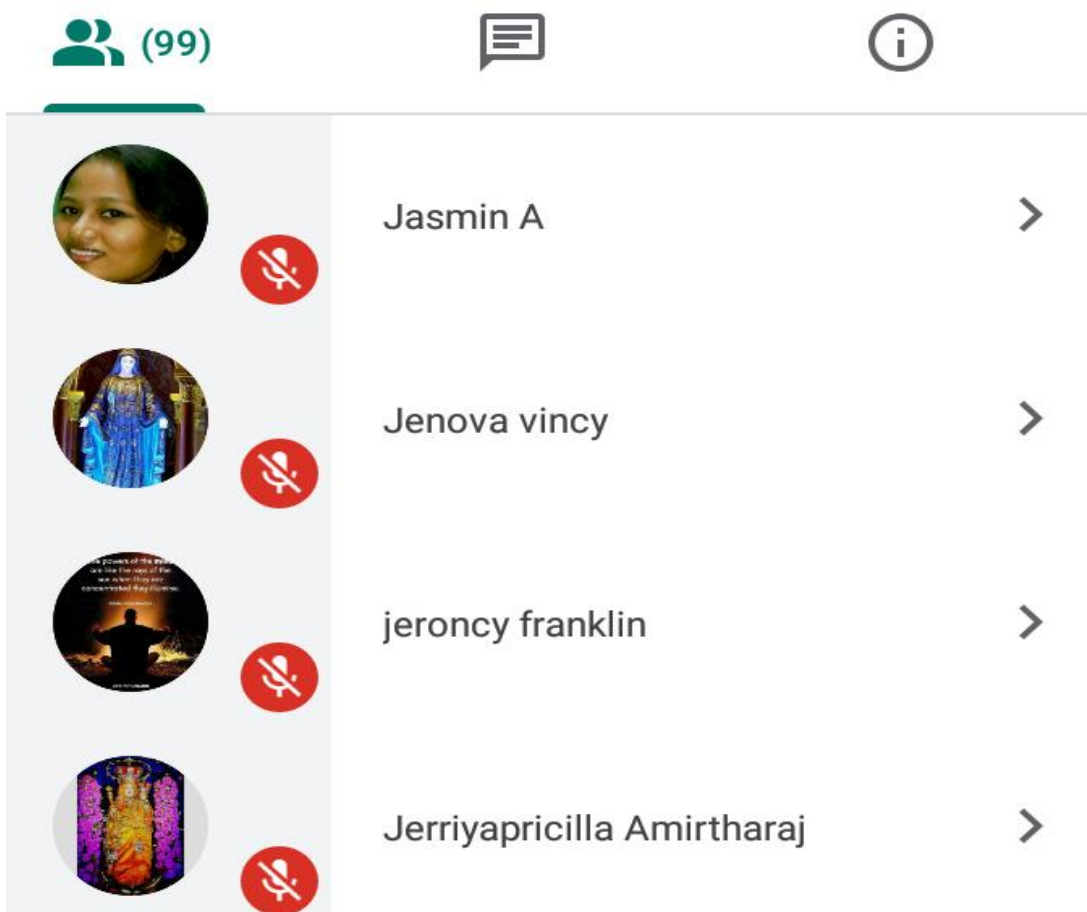
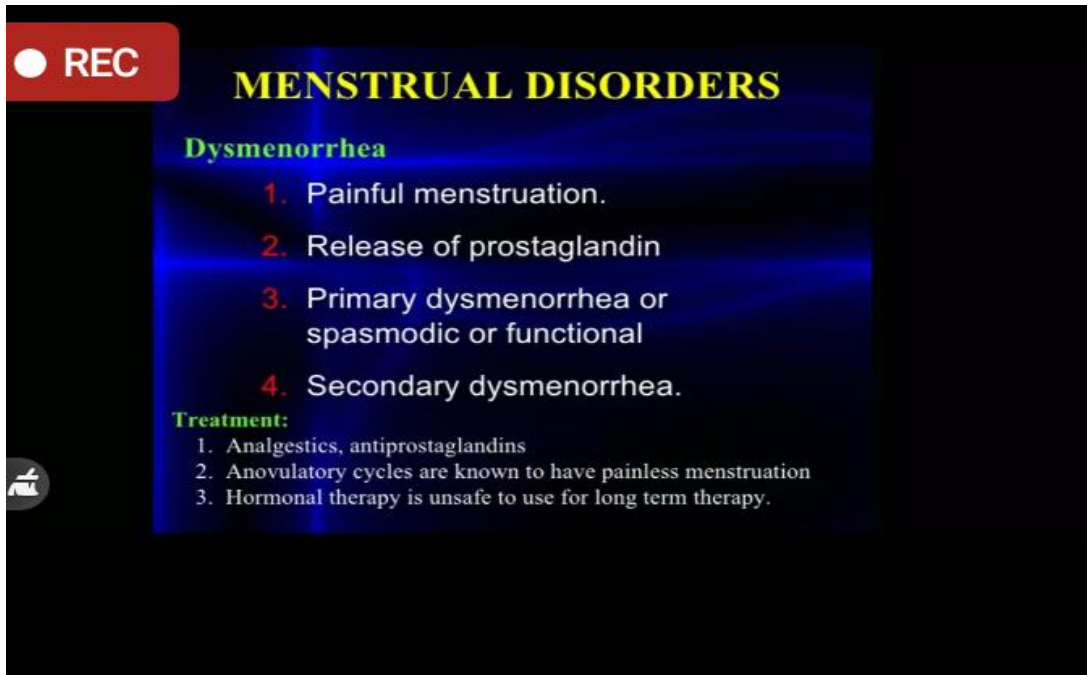
**Ms. S. Babiyana**  
Assistant Professor of Physics

**Ms. N. Jayalakshmi**  
Assistant Professor of Physics

**Dr. A. Inigomary Rita**  
Head of the Department of Physics

**Dr. (Sr). A. Christina Bridget**  
Principal

# SCREENSHOTS OF THE EVENT





● REC

## Period symptoms

- Cramps
- Tender breasts
- Bloating
- Mood swings
- Irritability
- Headaches
- Tiredness
- Low back pain



82%

You  



70% 3:30 PM



Webinar on Menstrual Cycle &...    (98)  



## HOW OFTEN TO CHANGE SANITARY NAPKIN



● REC



- Change atleast once a day
- Changing every six-eight hours is recommended
- During heavy menses, may need to change every 3-4 hours
- Do not keep till completely soaked

83%

You  

INIGO MA...  

Jasmin A  

Jenova  





REC Advaita.V.P. 9 C is presenting U19PH519 Merli... and 94 more 100 3:33 PM You

FOR SANITARY NAPKIN DISPOSAL  
 These bags were made by newspapers of South Pole  
 By buying this, you  
 - contribute to a landfill  
 - protect the environment  
 - save newspapers the indignity of handing your soiled sanitary napkin directly.

Preparing newspaper bags with recyclable newspaper, glue, and thread helps in disposing sanitary napkins in a healthy, environmentally friendly, wastepicker friendly way

You  
 Ms. N. Jayalakshmi TPH2019...  
 Paulin Edwidge Mary

Meeting details ^

Advaita.V.P. 9 C is presenting

REC Advaita.V.P. 9 C is presenting Thirisha Rajendr... and 94 more 100 3:32 PM You

Disposal of napkins .....

We use sanitary napkins for our convenience and dispose them off randomly in the bin, or in the toilet sparing little thought to what happens after.....

You  
 Ms. N. Jayalakshmi TPH2019...  
 Paulin Edwidge Mary

Meeting details ^

Advaita.V.P. 9 C is presenting

REC Advaitha.V.P. 9 C is presenting A. Maria Bernadette Leena TPH2000... and 91 more 4:13 PM You

# Meditation

Meeting details ^

Advaitha.V.P. 9 C is presenting

You Ms. N. Jayalaks  
 Paulin Edwidge ... Ms. N. Jayalaks

REC 4:58 69%

## Physics Nobel prize in the year 2020

R. Genzel A. Ghez R. Penrose

Rogen Penrose: Black hole formation is a robust prediction of the general theory of relativity  
 Reinhard Genzel & Andrea Ghez: Discovery of massive compact object at the centre of our Galaxy

Mary Minolia.E U18PH032 left

You  
 ROSELIN  
 Janaki  
 93 others

You

REC Advaitha.V.P. 9 C is presenting Jeya Princy and 97 more 100 3:21 PM You

## ovulation phase

Cycle days (approximate)	Events of the menstrual cycle
Day 14-25 (ovulation phase)	<ul style="list-style-type: none"> <li>•Ovulation is when your ovary releases a mature egg.</li> <li>•The egg travels down the fallopian tube toward the uterus to be fertilized by sperm.</li> <li>•Ovulation happens at around day 14 if you have a 28-day cycle — right in the middle of your menstrual cycle. It lasts about 24 hours.</li> <li>•After a day, the egg will die or dissolve if it isn't fertilized.</li> </ul>

**Symptoms:**

- A slight rise in [basal body temperature](#).
- Thicker discharge that has the texture of egg whites

Meeting details ^

Advaitha.V.P. 9 C is presenting

# REPORT - GREAT CONJUNCTION OF JUPITER AND SATURN

PG and Research Department of Physics in association with Vigyan Prachar, DST, TNSTC, Ariviyal Palagai, Trichy Astro Club, Physics Departments of Bishop Heber College, Trichy, National College, Trichy, Jamal Mohamed College, Trichy and Nehru Memorial College, Puthanampatty, organized a ZOOM online live programme of Great Conjunction of Jupiter and Saturn on 20<sup>th</sup> December 2020 at 6.30 p.m. More than 252 students and 18 staff attended the programme through ZOOM platform and Youtube.

# E-INVITATION OF THE EVENT

வி  
P  
V  
பு



விஞ்ஞான் பிரச்சார் - தமிழ்நாடு அறிவியல் தொழில்நுட்ப மையம்  
( மத்திய அரசு , புதுடெல்லி) (தமிழ்நாடு அரசு)

அறிவியல் பலகை - திருச்சி அஸ்ட்ரோ கிளப்  
இணைந்து நடத்தும்



வியாழனும் சனியும்  
சந்திக்கும் பொழுது...

20.12.2020 நேரம் : மாலை 6 மணி



ZOOM  
Talk

ID: 876 6657 2061

Password:807856

திரு.வை.இராஜசேகர்

விஞ்ஞானி  
இஸ்ரோ - திருவனந்தபுரம்

இயற்பியல் துறைகள்...

Ariviyal Palagai  
LIVE  
YouTube



National College  
Trichy.



Aiman  
Arts and Science  
College for  
Women -Trichy



Jamal Mohamed  
College -Trichy



Periyar  
E.V.R. College  
Trichy



Bishop Heber  
College -Trichy



St. Joseph  
College -Trichy



Holy Cross  
College -Trichy



Nehru Memorial  
College -  
Puthanampatti

# **REPORT - ALUMNAE MEET**

The PG & Research Department of Physics, Holy Cross College (Autonomous), Tiruchirappalli arranged the departmental alumnae meet in the name of HOMECOMING 2021 on 9<sup>th</sup> January, 2021 through Google Meet platform. The alumnae meet began with a prayer and the welcome address was delivered by Dr. A. Inigomary Rita, Head, Department of Physics. The senior staff member of Physics Department Mrs. J. Malathy rendered an inspirational talk to the participants. 116 participants have registered for the alumnae meet out of which 69 participants attended this meet. Alumnae from various batches met all the staff members online and shared their experience and thanked them for their kind support and encouragement throughout their course. Alumnae details were collected through Google form. The innovative and interesting games were conducted for the participants. Dr. A. Philominal, Assistant Professor, Department of Physics proposed the vote of thanks.

# E-INVITATION OF THE EVENT

**HOLY CROSS COLLEGE (AUTONOMOUS), TRICHY**

**PG & RESEARCH  
DEPARTMENT OF PHYSICS**

**Homecoming 2021**

**Get Together  
to Rejoice**

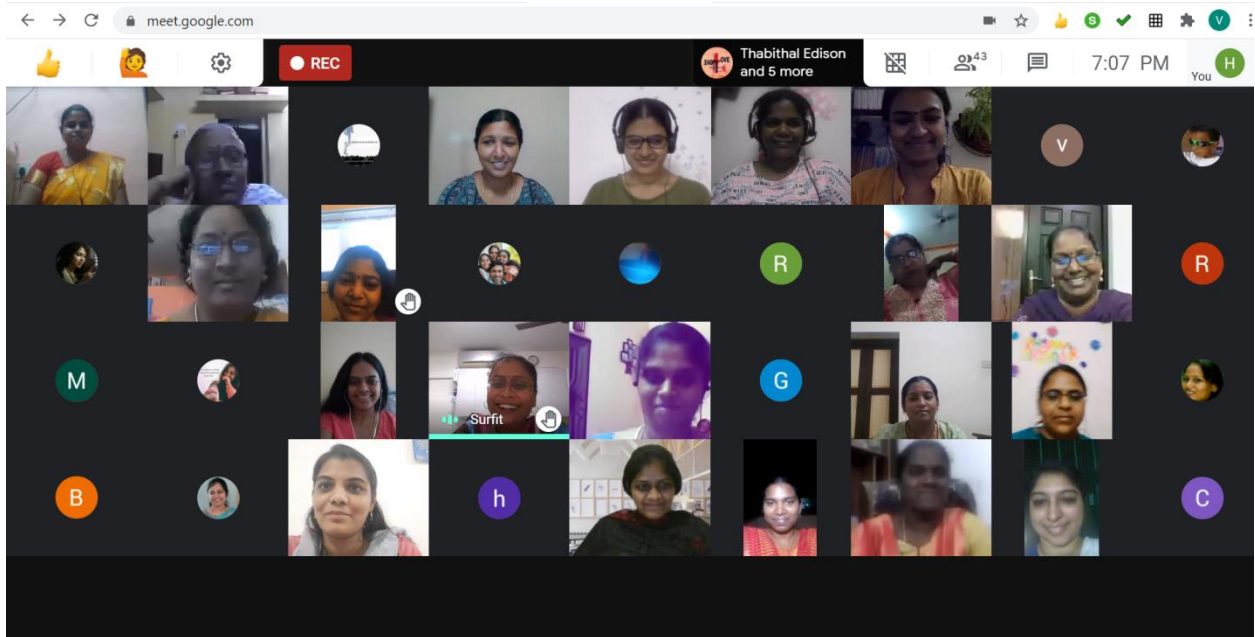
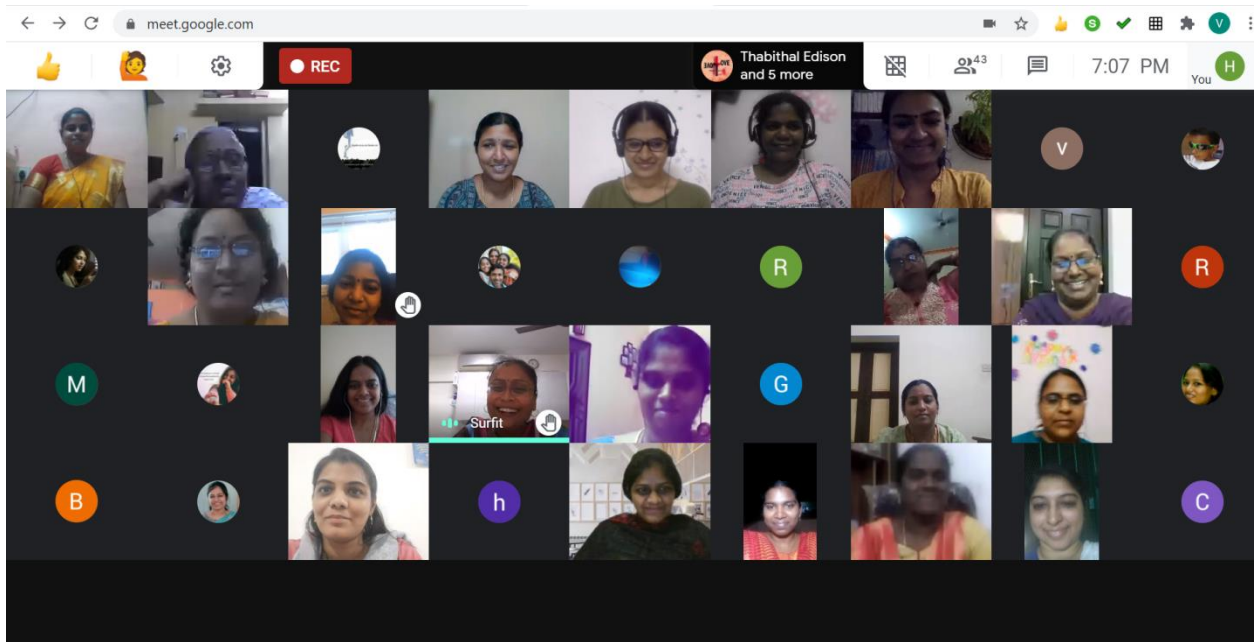
**9th January**

**5.30 p.m.**

**You are  
Invited!**

<https://meet.google.com/xkn-ivzp-aok>

# SCREENSHOTS OF THE EVENT



# **WEBINAR REPORT**

The webinar on “EMERGING TRENDS IN RESEARCH” was organized by PG and Research Department of Physics, Holy Cross College (Autonomous), Tiruchirappalli on January 27<sup>th</sup>, 2021 through Google Meet platform. The resource person, Dr. A. Nancy Anna Anasthasiya, Research Associate, IGCAR, Kalpakkam, began her presentation with a brief introduction about research and its importance in education. The speaker emphasized that research is a systematic work to be carried out to increase the stock of knowledge, and only hard work and smart thinking will lead to success in this field. She stated that the Nanoparticle research is currently an area of research which is widely being focused due to its wide variety of potential applications in biomedical, optical, electronics and healthcare/medical fields. She also explored the applications of nanomaterials in solar cells, super capacitors, batteries, light emitting diodes and so forth. Finally, she concluded the session by highlighting the various job opportunities in research. A total of 243 [225 Students + 18 Staff] participants attended the webinar with great enthusiasm.



# E-INVITATION OF THE EVENT



## **HOLY CROSS COLLEGE (AUTONOMOUS)**

Affiliated to Bharathidasan University  
Nationally Accredited (4th Cycle) with  
A++ Grade (CGPA 3.75/4) by NAAC  
College with Potential for Excellence

**TIRUCHIRAPPALLI**

## **PG & RESEARCH**



## **DEPARTMENT OF PHYSICS**

*Organizes a webinar on*

## **EMERGING TRENDS IN RESEARCH**



**RESOURCE PERSON**

**Dr. A. Nancy Anna Anasthasiya**  
Research Associate,  
IGCAR, Kalpakam

*Join Us On*



<https://meet.google.com/zdy-yhyv-viv>

**JANUARY 27, 2021 @ 5:30 PM**

*Watch live on*



*Organizers*

**Ms. A. Jasmin Banu**  
Assistant Professor of Physics

**Ms. S. Babiya**  
Assistant Professor of Physics

**Ms. N. Jayalakshmi**  
Assistant Professor of Physics

**Dr. A. Inigomary Rita**  
Head of the Department of Physics

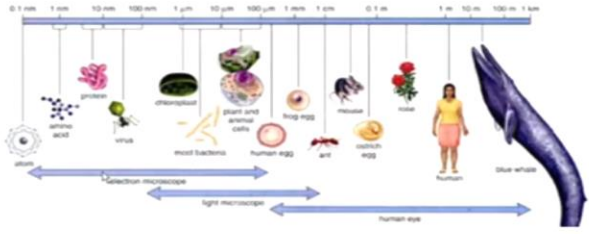
**Dr. (Sr). A. Christina Bridget**  
Principal

# SCREENSHOTS OF THE EVENT

REC Nancy Anasthasiya is presenting REBEKA SUMIL L. 2KL... and 91 more 5:51 PM

## Nanomaterials

Size of objects in the scale of 1 to 100 nm, at least in one dimension



0.1 nm 1 nm 10 nm 100 nm 1 μm 10 μm 100 μm 1 mm 1 cm 1 m 1 km

atom protein virus pollen plant and animal cells human egg sperm human hair human blue whale

electron microscope light microscope human eye

1:27:2021

Meeting details

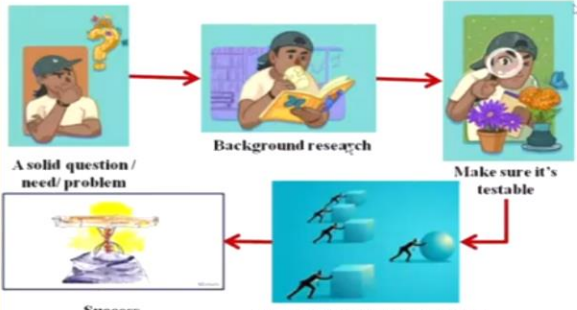
Raise hand Turn on captions Nancy Anasthasiya is presenting

U1WP1030 Infant Abhis Nancy Anasthasiya Jasmin A U1WP1030 Harsh V S Swetha S HOC Physics

REC Nancy Anasthasiya is presenting MARIA ANISHA A. 2KL... and 91 more 5:50 PM

## Research

Creative and systematic work undertaken to increase the stock of knowledge



A solid question / need / problem

Background research

Make sure it's testable

Hard work and smart thinking

Success

1:27:2021

Meeting details

Raise hand Turn on captions Nancy Anasthasiya is presenting

U1WP1030 Infant Abhis Nancy Anasthasiya Jasmin A U1WP1030 Harsh V S Swetha S HOC Physics

REC Nancy Anasthasiya is presenting 6:11 PM You M

- **Did I get research based job in Tamil Nadu?**  
Yes
- **Is it easy to get job in research field?**  
Yes
- **What should I do to get job?**
  1. Desire – விரும்பு
  2. Search - தேடல்
  3. Study well with understanding- புரிதலுடன் நன்றாகப் படிக்கவும்

Meeting details ^ M You M MAMTHA A 2K... S STIVYA PRISCI... Nancy Anastha...

Meeting controls: Mute, Video, Screen Share, Raise hand, Turn on captions, Nancy Anasthasiya is presenting

REC presenting 6:10 PM You M

- **Can I join in research institution using M.Sc qualification?**  
Yes, Scientific Officer, Technical officer, Junior Research Fellowship (JRF), Project Assistant and Ph.D.
- **Qualification**  
Minimum 60% mark in M.Sc Physics
- **Salary and age limit**
  1. Scientific/Technical Officer: Rs. 67,700 - 56,100 + Govt. allowances and 26 years
  2. Junior Research Fellowship (JRF): Rs. 31,000 and 28 years
  3. Project Assistant: Minimum Rs. 16,000 and no age limit

Meeting details ^ M You M MAMTHA A 2K... M Deepa S SRIVARSHNI R... Nancy Anasthasiya is presenting

Meeting controls: Mute, Video, Screen Share, Raise hand, Turn on captions, Nancy Anasthasiya is presenting

# IWAFM 2021 REPORT

The “International Webinar on Advanced Functional Materials (IWAFM) 2021” was organized by Dr. A. Inigomary Rita, Head of the Department of Physics, Ms. A. Jasmin Banu, Ms. S. Babiyana and Ms. A. Jayalakshmi, Assistant Professors of Physics, PG and Research Department of Physics, Holy Cross College (Autonomous), Tiruchirappalli on February 15<sup>th</sup>, 2021 through Google Meet Platform.

The International Webinar began by invoking the blessings of the Almighty through the prayer service followed with the Presidential Address by Rev. Sr. (Dr.). A. Christina Bridget, Principal, and Welcome Address by Dr. A. Inigomary Rita, Head of the Department of Physics, Holy Cross College (Autonomous), Trichy.

The Inaugural address was delivered by Dr. A. Dennyson Savariraj, Research Professor, Sunchon National University, South Korea. He welcomed all the delegates contributing in this International Webinar from different corners of the globe and also briefed about the objectives of the IWAFM 2021 and its vision.

Dr. A. Jenifer Christy, Assistant Professor of Physics, Holy Cross College (Autonomous), Trichy, introduced the first speaker of the session, Dr. A. Dennyson Savariraj, Research Professor, Sunchon National University, South Korea. Dr. A. Dennyson Savariraj started his presentation on the topic “Advances in Engineering Metal-Organic Frameworks for Energy Storage Applications”. He explained that Metal-organic frameworks (MOFs) are a class of crystalline materials with enhanced porosity, low densities and large internal surface areas with structural and functional tunability. MOFs can be constructed in one-, two-, and three-dimensional networks from metal-containing nodes and organic linkers. He discussed about the preparation of MOFs, its modifications and how MOFs can be employed as scaffolds to immobilize active functional materials and as sacrificial templates to obtain highly ordered nanostructures. Both MOFs and their derivatives serve as carriers to store energy by facilitating both electron and mass transport. He emphasized that MOFs serves as the promising candidates for energy harvesting and storage applications such as solar cells, super capacitors, batteries, fuel cells and hydrogen storage.

Dr. J. Emima Jeronisa, Assistant Professor of Physics, Holy Cross College (Autonomous), Trichy, introduced the second speaker, Dr. Vijayshankar Asokan, Researcher, Chalmers University of Technology, Gothenburg, Sweden. Dr. Vijayshankar Asokan elaborated on the topic “Electron and Hole Transport Layers in Perovskite Solar Cells (PSC)”. He discussed about the generations of solar cells, photovoltaic principle and the basic parameters of a solar cell such as the short circuit current, open circuit voltage, solar cell efficiency, fill factor and power. Dr. Vijayshankar explained the typical PSC is composed of an electron transport layer (ETL), an active absorbing layer, a HTL, and a counter electrode. To improve the performance of PSCs, it is essential to prevent the carrier recombination losses at the interfaces of the transparent metal oxide electrode/electron transport layer (ETL)/active absorber Perovskite layer. He highlighted the importance of multijunction solar cells and the impact of it on the efficiency of the solar cells. He stressed on the fact that the Perovskite Solar Cells (PSCs) have become the rising star in third-generation thin-film photovoltaic technology and is attracting broad attention in both the academic and industrial communities.

The third session of the webinar was chaired by the speaker Dr. G. Kalaiselvan Ganesan, Research Associate, Quantum Matter, Department of Physics, The Cavendish Laboratory, University of Cambridge, United Kingdom, and Ms. M. D. Mercy Jennifer, Assistant Professor, Holy Cross College (Autonomous), Trichy, introduced the speaker to the participants. He began his presentation on the topic “Pressure Effect on High  $T_c$  Super Conductors”. He discussed about the Meissner effect, BCS theory and then explained about the superconductors, history, classification, various superconductivity elements, other new superconductors and application of superconductors. He discussed about the high pressure experimental techniques, the preparation of samples and the impact of external pressure on superconductivity. He highlighted on the fact that how the new FeAs superconductors are thought provoking for both experimentalists and theoreticians outside the HTSc mystery of more than over decades by now.

At the end of each sessions, the participants interacted with the speakers and clarified their doubts. The results of DOC FEST 2020 competition were declared. Ms. A. Jasmin Banu, Association President and Assistant Professor of Physics delivered the vote of thanks. Total number of beneficiaries: 460

# E-INVITATION OF THE EVENT



## HOLY CROSS COLLEGE (AUTONOMOUS)

Affiliated to Bharathidasan University  
Nationally Accredited (4th Cycle) with  
A++ Grade (CGPA 3.75/4) by NAAC  
College with Potential for Excellence  
TIRUCHIRAPPALLI - 620 002, TAMIL NADU, INDIA

### PG & RESEARCH DEPARTMENT OF PHYSICS

*Organizes*

## IWAFM 2021

INTERNATIONAL WEBINAR ON ADVANCED FUNCTIONAL MATERIALS

#### INVITED SPEAKERS



#### Dr. A. Dennyson Savariraj

Research Professor  
Suncheon National University  
South Korea

Title: Advances in Engineering MOFs for Energy Storage Applications  
Time: 10:00 a.m. - 11:00 a.m. (IST)



#### Dr. Vijayshankar Asokan

Researcher  
Chalmers University of Technology  
Gothenburg, Sweden  
Title: Electron & Hole transport layers in Perovskite Solar Cells  
Time: 11:15 a.m. - 12:15 p.m. (IST)



#### Dr. G. Kalaiselvan Ganesan

Research Associate  
Quantum Matter, Department of Physics  
The Cavendish Laboratory  
University of Cambridge  
United Kingdom  
Title: Pressure effect on High Tc Superconductors  
to the recent ones & the hidden connection  
Time: 2:30 p.m. - 3:30 p.m. (IST)



*Presided by*

**Rev. Sr. (Dr.) A. Christina Bridget**  
Principal

*Conveners*  
Dr. A. Inigomary Rita, H.O.D. of Physics  
Ms. A. Jasmin Banu, AP/Physics  
Ms. S. Babiyana, AP/Physics  
Ms. N. Jayalakshmi, AP/Physics



Join us via



- . No registration fee
- . E-Certificate will be issued
- . Last date for registration: 13.02.2021

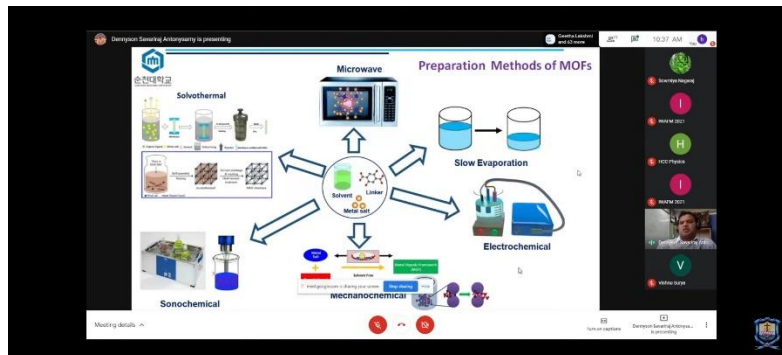
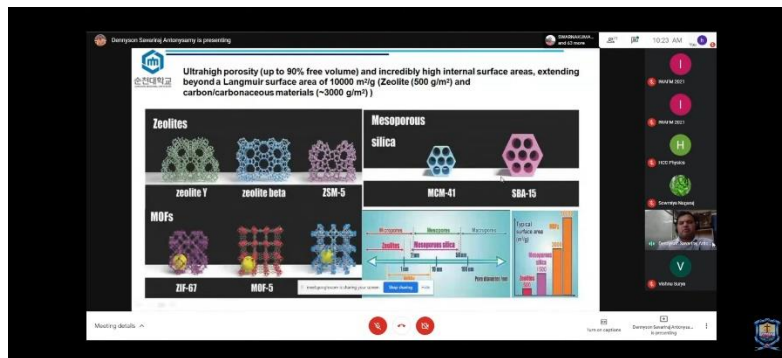


**FEBRUARY 15, 2021**

**REGISTRATION LINK:**

<https://forms.gle/iamLyVGkZYURDLvZA>

# SCREENSHOTS OF THE EVENT



10:43

Overseas Seminars Antwerp is presenting

**Clean Energy**

- Batteries
- Solar cells
- Supercapacitors
- Fuel Cell
- Hydrogen Storage

**Metal-Organic Frameworks**

Meeting details

11:12 AM

Participants: S, I, H, I, V

Overseas Seminars Antwerp is presenting

**Applications of MOF**

Gas storage, Separation, Purification, Catalyst, Drug storage, Sensor

**MOF**

Water Splitting, Solar Cells, CO<sub>2</sub> Reduction, Li-ion, Supercapacitors, Fuel Cells, Metal-Organic Frameworks (MOF), MOF Composites, MOF Derivatives

Meeting details

11:13 AM

Participants: I, H, I, V

Vijay Anandan is presenting

**Electron and Hole transport layers of perovskite material based solar cell devices**

Dr. Vijay Anandan, Researcher, Energy and Materials Division, Department of Chemistry and Chemical Engineering, Chalmers University of Technology, Sweden.

Next slide

No Notes.

Meeting details

11:18 AM

Participants: I, V, I, I, I, I, V

Vijay Anandan is presenting

Next slide

No Notes.

Meeting details

11:19 AM

Participants: I, S, I, I, I, H



Vijay Anand is presenting

### What are Photovoltaics?

Photovoltaic (PV) systems convert light energy directly into electricity. Commonly known as "solar cells".

The simplest systems power the small calculators we use every day.

PV represent one of the most promising means of generating our energy demands provided of being able to successfully produce, transport and utilize.

Nearly infinite supply of FREE energy. Sun gives us  $10^{17}$  J/m<sup>2</sup> per second. The Sun emits energy about 100 times more energy to the Earth than we consume.

Other radiation and, but better - see elsewhere - long distance.

Next slide

No Notes.

Vijay Anand is presenting

### Solar cells

OPV (Organic Photovoltaic)

Thin Film (Monocrystalline, Polycrystalline, CdTe)

Crystalline Silicon (Monocrystalline, Polycrystalline)

Next slide

### Why multiplication?

Power = Current X Voltage

No Notes.

International Webinar on Advanced Functional Materials 202...

Vijay Anand is presenting

### Multi-junction solar cells

Multi-junction cells use multiple materials to match the solar spectrum.

Next slide

The high efficiency solar cells use multiple materials that span the solar spectrum. Multi-junction solar cells consist of some single junction solar cells stacked upon each other, so that each layer going from the top to the bottom has a smaller bandgap than the previous.

Live

Important questions with ANSWERS in English

High Pressure Experimental techniques- Sample Preparation

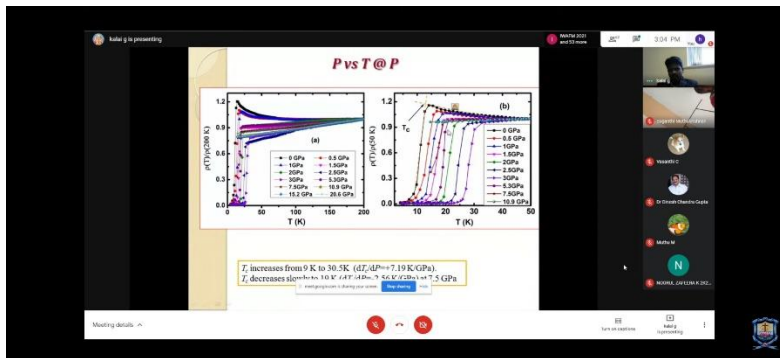
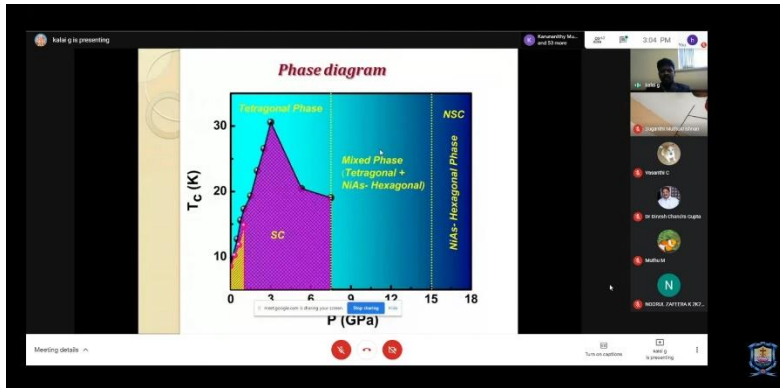
Cavendish Laboratory, University of Cambridge UK

Prof. A. K. Ganguli, IIT Delhi

Dr. V.P.S. Awana, NPL, New Delhi

Prof. P.Mandal, SINP, Calcutta

Next slide



# **MAGAZINE RELEASE AND VALEDICTORY FUNCTION REPORT**

MAGPHY Release and Valedictory Function was organized by the PG and Research Department of Physics, Holy Cross College (Autonomous), Tiruchirappalli on March 22<sup>nd</sup>, 2020. The function started with the welcome address by Ms. S. Babiyana, Assistant Professor of Physics. The resource person was Professor M. Senthilvelan, Head of the Department of Nonlinear Dynamics, Bharathidasan University. He released the MAGPHY magazine and appreciated the students' overwhelming contribution of articles towards the magazine. He wished Dr. (Mrs).Inigo Mary Rita, Head of the Department, and her staff all success in exploring the new horizons in Teaching-Learning process through this MAGPHY. He congratulated the staff and student association leaders for their hard work and dedication that has resulted in the publication of MAGPHY. Ms. A. Jasmin Banu, Physics Association President and Assistant Professor of Physics, Holy Cross College (Autonomous), Trichy, delivered the vote of thanks. Total No. of Beneficiaries: 180.