# Report on Webinar

**Department of Physics, Manipal University Jaipur** organized the webinar on "**Probing the matter beyond five senses"** on **June 18*, 2020***.

**Speaker of the Webinar**: Prof. Pankaj Poddar, Senior Principal Scientist

Physical & Materials Chemistry Division

CSIR-National Chemical Laboratory, Pune, India

**Coordinators of the Webinar**: Dr. Sushil kumar Jain and Dr. Saikat Chattopadhyay

Total no. of participants Registered: 320

Total no of participants attended the webinar:102

**Schedule of the webinar**

| Time Schedule | Details of Speaker |
|---|---|
| **11:30AM-11:35AM** | **Prof. Anoop Mukhopadhyay, Dean FOS: About the Theme** |
| **11:35AM - 11:40AM** | **Prof. Lalita Ledwani, Director, SBS: About School of Basic Sciences** |
| **11:40AM - 11:43AM** | **Dr. Pushpendra Kumar, HoD: About Department of Physics** |
| **11:43 AM-11:47AM** | **Dr. Sushil Kumar Jain: About the Speaker** |
| **11:47AM-11:50AM** | **Dr. Sushil Kumar Jain: About the Abstract/Talk** |
| **11:50AM – 12:30PM** | **Speaker: Prof. Pankaj Poddar, Senior Principal Scientist, CSIR** |
| **12:30PM - 12:35PM** | **Vote of Thanks: Dr. K. P. Misra** |

***Summary of the talk***

Department of Physics, Manipal University Jaipur, organized a webinar on "Probing the matter beyond five senses" presented by Prof. Pankaj Poddar, Senior Principal Scientist, Physical and Materials Chemistry Division, CSIR- NCL Pune.

Prof. Anoop Mukhopadhyay, Dean FOS welcomed the speaker and participants and discussed about the theme of webinar. He highlighted the different characterization techniques like SEM, TEM, AFM for the nanomaterials. Prof. Lalita Ledwani, Director SBS briefed about the School of Basic Sciences and demonstrated the achievements of different departments. Dr. Pushpendra Kumar told about the department of Physics and mentioned about the total no of faculty members, no of publications and their achievements etc.

Dr. Sushil Kumar Jain introduced the speaker and Dr. Saikat Chattopadhyay anchored overall activity.

Prof. Pankaj Poddar discussed that in ancient times, humans started probing the objects around them while walking on the planet earth having possessed newly developed 'neo-cortex' and ability to 'walk-straight' on two legs. Though, during the evolution, simplest to most complex forms of life are all known to have sensory mechanism to probe the objects around them for food, reproduction, survival from predators etc. All these activities basically require sensory mechanism to be able to smell, taste, touch, see, and hear. Though, the ability to probe the world around them is considered much better in non-human species than humans. However, gifted with better-evolved brain, humans could consciously use their own sensory information to store, analyze, and react. However, soon they found the limitation of their own senses over certain animals.

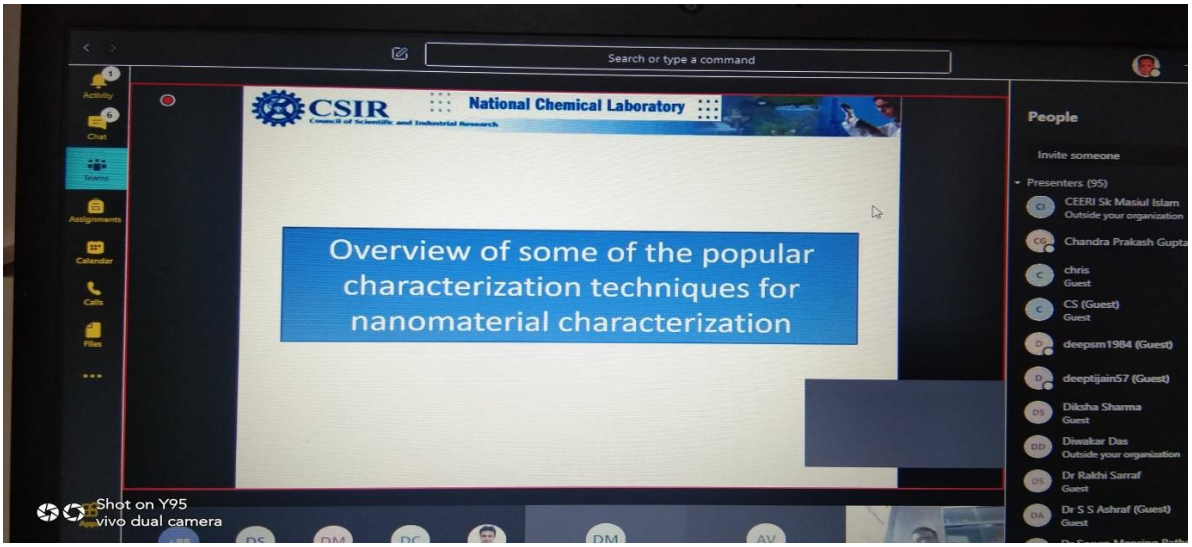
He also discussed that second phase of the human evolution was to use animal sensory mechanism for their own benefit. For example, use of dogs for better smell.

He told that, in third phase, humans started using much-evolved tools to probe the objects with much sophistication and that was probably the birth of early phase of characterization tools in the first place. However, having discovered the power of neutrons, X-rays, electron beam, synchrotron sources, lasers, terahertz, radio waves, etc. along with the understanding of fundamental forces, the 20th century witnessed a rapid growth of advanced characterization tools aided by the wisdom of quantum mechanics. These tools started pouring out mind-boggling information about living and non-living world. Overwhelmed with this vast information, new technologies were developed, and rapid industrialization started. The growth of improvisation of material characterization is unstoppable with newer techniques evolving day-by-day giving insights at extreme time and length scales. The nanoscale objects gave new challenges to the existing techniques pushing the man and machine both to its limits.

He presents the overview of the growth of some of these techniques, challenges posed by the nanomaterials. In addition, he also presented a roadmap for their future growth for coming decades.

**Vote of Thanks:** At the end of the programme vote of thanks was proposed by Dr. K. P. Misra.

# Flyer and Photo of the Webinar


Search or type a command
CSIR
National Chemical Laboratory
Overview of some of the popular characterization techniques for nanomaterial characterization
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Invite someone
Presenters (95)
CEERI Sk Masiul Islam
Outside your organization
Chandra Prakash Gupta
chris
Guest
CS (Guest)
Guest
deepsm1984 (Guest)
deeptijain57 (Guest)
Diksha Sharma
Guest
Diwakar Das
Outside your organization
Dr Rakhi Sarraf
Guest
Dr S S Ashraf (Guest)
Guest
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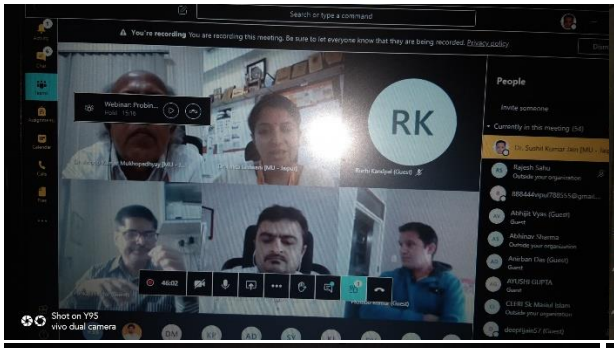
vivo dual camera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People
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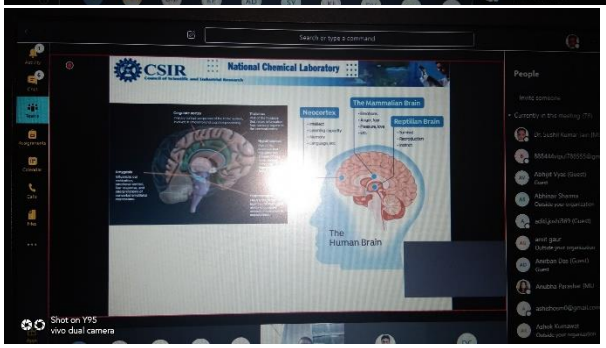
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CSIR
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Neocortex
The Mammalian Brain
Reptilian Brain
The Human Brain
People
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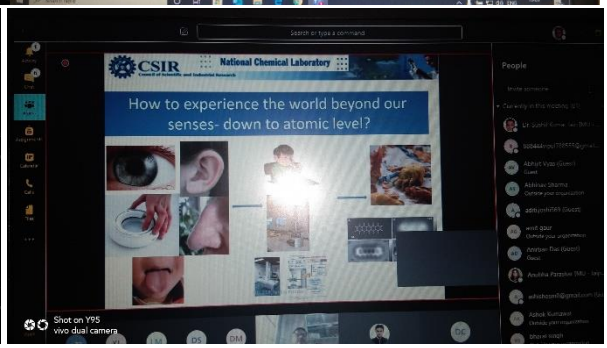
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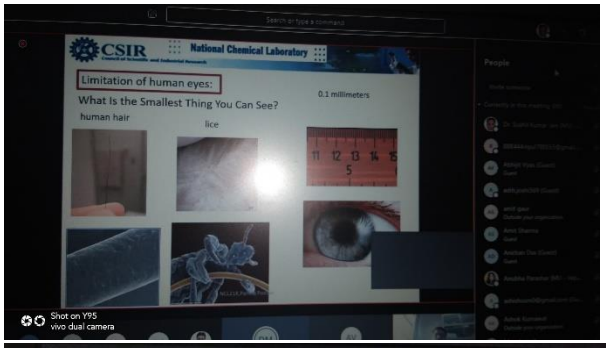
CSIR
National Chemical Laboratory
How to experience the world beyond our senses- down to atomic level?
People
Shot on Y95
vivo dual camera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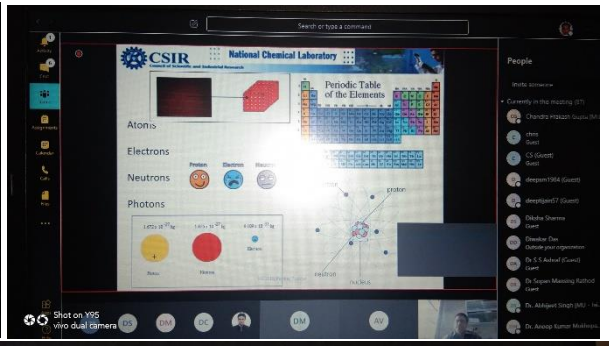
Limitation of human eyes:
What Is the Smallest Thing You Can See?
human hair
lice
0.1 millimeters
Shot on Y95
vivo dual camera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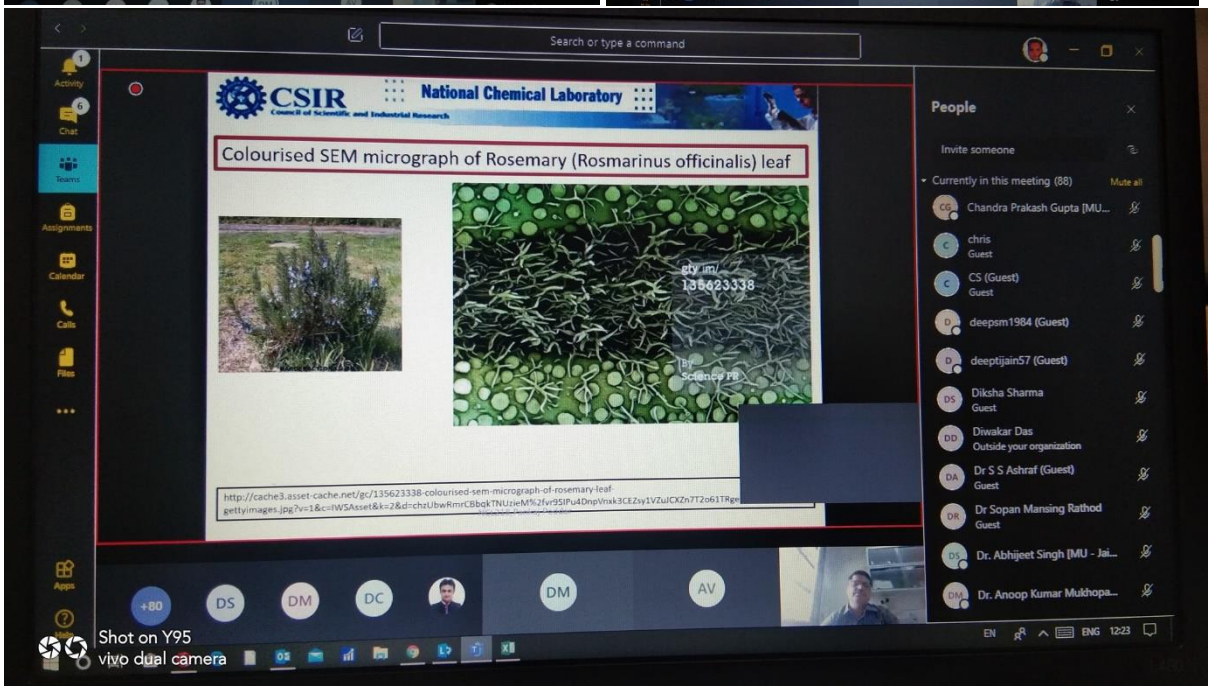
Periodic Table of the Elements
Atoms
Electrons
Neutrons
Photons
Shot on Y95
vivo dual camera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Colourised SEM micrograph of Rosemary (Rosmarinus officinalis) leaf
People
Invite someone
Currently in this meeting (88)
Mute all
Chandra Prakash Gupta [MU...
chris
Guest
CS (Guest)
Guest
deepsm1984 (Guest)
deeptijain57 (Guest)
Diksha Sharma
Guest
Diwakar Das
Outside your organization
Dr S S Ashraf (Guest)
Guest
Dr Sopan Mansing Rathod
Guest
Dr. Abhijeet Singh [MU - Jai...
Dr. Anoop Kumar Mulkhopa...
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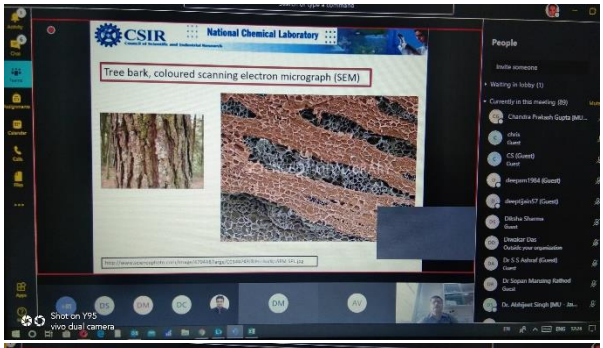
vivo dual camera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Tree bark, coloured scanning electron micrograph (SEM)
Shot on Y95
vivo dual camera


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A false-colour scanning electron micrograph of grass pollen grains, a major cause of hay fever
Shot on Y95
vivo dual camera


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Circa 1284 - Italian, Salvino D'Armate: First wearable eye glasses.
Shot on Y95
vivo dual camera


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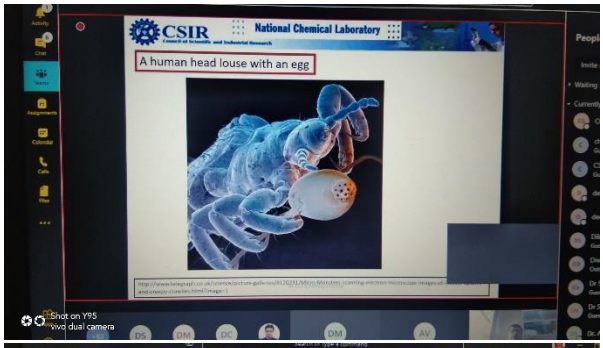
Coloured scanning electron micrograph (SEM) of a single dust mite among skin scales in housedust
Shot on Y95
vivo dual camera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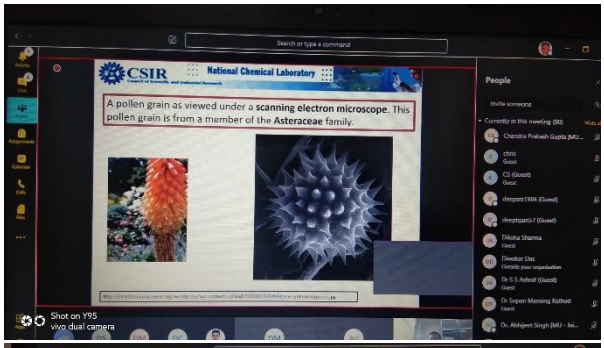
A human head louse with an egg
Shot on Y95
vivo dual camera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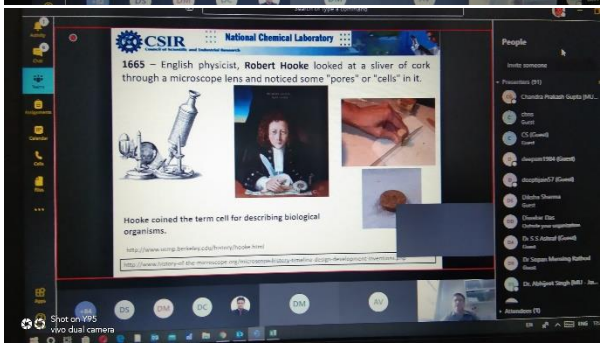
A pollen grain as viewed under a scanning electron microscope. This pollen grain is from a member of the Asteraceae family.
Shot on Y95
vivo dual camera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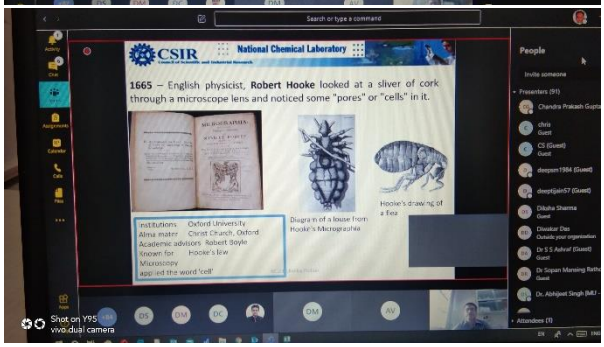
1665 – English physicist, Robert Hooke looked at a sliver of cork through a microscope lens and noticed some "pores" or "cells" in it.
Hooke coined the term cell for describing biological organisms.
Shot on Y95
vivo dual camera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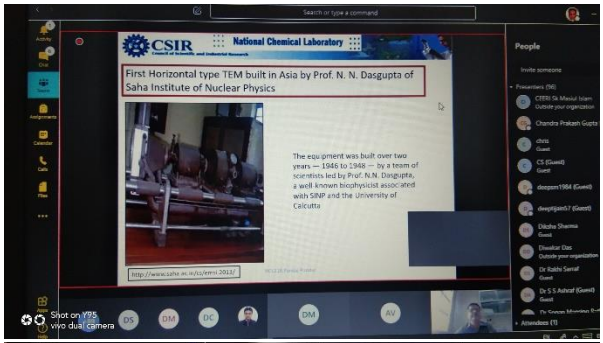
1665 – English physicist, Robert Hooke looked at a sliver of cork through a microscope lens and noticed some "pores" or "cells" in it.
Institutions Oxford University
Alma mater Christ Church, Oxford
Academic advisors Robert Boyle
Known for Hooke's law
Microscopy
applied the word 'cell'
Diagram of a louse from Hooke's Micrographia
Hooke's drawing of a flea
Shot on Y95
vivo dual camera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First Horizontal type TEM built in Asia by Prof. N. N. Dasgupta of Saha Institute of Nuclear Physics
The equipment was built over two years — 1946 to 1948 — by a team of scientists led by Prof. N.N. Dasgupta, a well known biophysicist associated with SINP and the University of Calcutta
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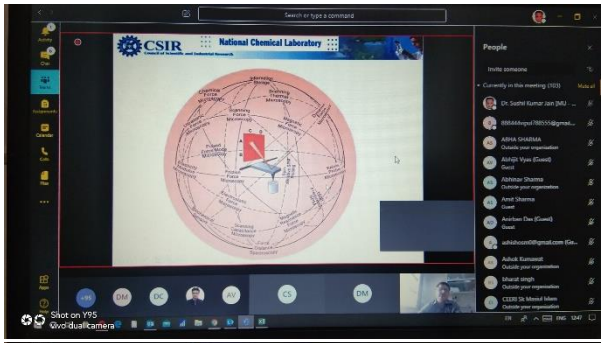
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National Chemical Laboratory
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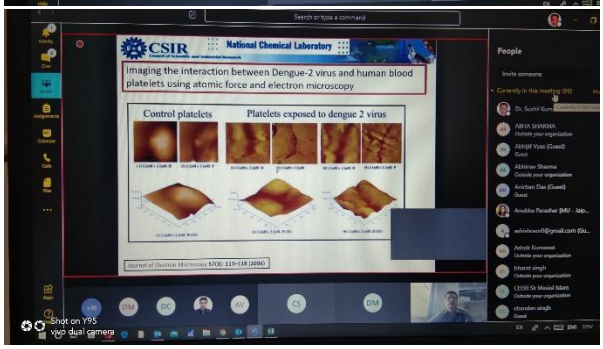
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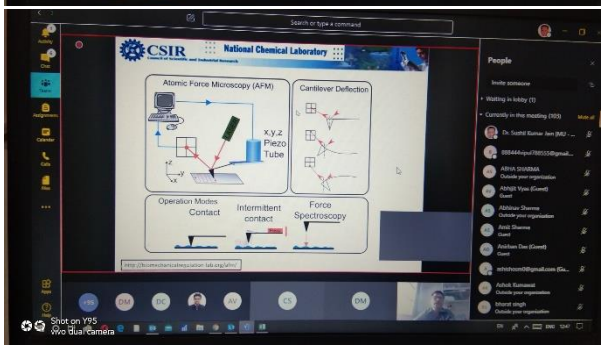
Imaging the interaction between Dengue-2 virus and human blood platelets using atomic force and electron microscopy
Control platelets
Platelets exposed to dengue 2 virus
Shot on Y95
vivo dual camera


CSIR
National Chemical Laboratory
Atomic Force Microscopy (AFM)
Cantilever Deflection
X,Y,Z Piezo Tube
Operation Modes
Contact
Intermittent contact
Force Spectroscopy
Shot on Y95
vivo dual camera