

### Chief Patron

**Prof. Ajit Kumar Chaturvedi**  
(Director, IIT Mandi)

### Chairperson of School

**Prof. Suman Kalyan Pal**  
(SBS, IIT Mandi)

### Newsletter Team

Dr. Ajay Soni,  
Dr. Bhaskar Mondal  
Dr. Muslim Malik  
Dr. Prasad Kasturi

### SBS Faculty Strength

Regular Faculty: 38  
Professor: 5  
Associate Professor: 18  
Assistant Professor: 14  
Ramalingaswami Fellow: 1  
Visiting Disting. Prof: 1

### Publications : ~ 90

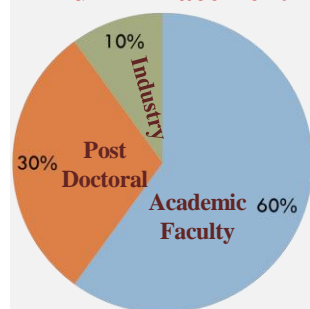
### Patents: 2

### External Funds : ~ 3 Cr

### Student Strength

PhD Scholars: 168  
M. Tech.: 31  
M. Sc.: 207  
B. Tech.: 133

### Alumni Placement



### SBS Staff

Anoop Kumar  
Alka Thakur  
Palvi Sharma  
Sushma Verma

## Chairperson's Message

Greetings!!

It is my great pleasure to extend heartfelt greetings to the readers of the second edition of the School of Basic Sciences (SBS)-Newsletter 'SPECTRUM'. With this newsletter we are disseminating the information relating to the activities of SBS during Jan 1<sup>st</sup>, 2021 to June 30<sup>th</sup>, 2021. I believe that the newsletter will serve as a window through which the complete profile of the academic and co-curricular activities, achievements and progress made during the stipulated period can be viewed. SBS is very active in pursuing high quality research, teaching and outreach activities. In spite of the adverse situation due to Covid-19, the School had a very fruitful year, 2021, so far. Our faculty are able to attract excellent amount of external research funding from various agencies. The achievements of SBS are the outcomes of sincere efforts made by our faculty members, students and staff in teaching, research, outreach and institute services. I would like to thank all my colleagues, staff and scholars for their tireless efforts which helped school to grow with excellent pace.

*Prof. Suman K Pal*

## Academic Programs

### UG Programs

B. Tech. in Data Science and Engineering,  
B. Tech. in Engineering Physics  
B.Tech.-M. Tech. Integrated Dual Degree in Bio-Engineering

### PG Programs

Integrated-PhD (Physics)  
M. Sc. (Chemistry, Mathematics and Physics)  
M. Tech. (Biotechnology)

### PhD Programmes

(BioX, Chemistry, Mathematics and Physics)



Welcome to the New Chairperson,  
**Prof. Suman Kalyan Pal**

## SBS Group Photo March 2021



## Faculty Recognitions and Awards



**Dr. Prasad Kasturi**, Assistant Professor (BioX) has been awarded Ramalingaswami Re-entry Fellowship by Department of Biotechnology, Government of India (2021-25). He works on the protein quality control during stress and ageing.



**Dr. Manoj Thakur**, Associate Professor (Mathematics) has been awarded for excellent teaching, for large classes of institute core courses, on 12<sup>th</sup> foundation day, IIT Mandi, 24.02.2021.



**Dr. Ajay Soni**, Associate Professor (Physics) has been awarded for excellent research outcome on 12<sup>th</sup> foundation day of IIT Mandi, 24.02.2021. He works in the area of experimental condensed matter physics.



**Dr. Baskar Bakthavachalu**, Assistant Professor (BioX) has received prestigious SERB-STAR Award (2021-24) and WellcomeTrust-DBT India Alliance Intermediate Fellowship (2020-25) to work on the cellular mechanisms that target viral replication, and to work on amyotrophic lateral sclerosis.



**Dr. Amit Jaiswal**, Assistant Professor (BioX) has been awarded for excellence in institute services, as a chief warden, on 12<sup>th</sup> foundation day of IIT Mandi, 24.02.2021.

**Recently Commenced Projects (~ 300 Lakh INR)**

**SERB**, PI: Dr. Qaiser Jahan, Budget: Rs. 6,60,000, Duration: 3 years  
**DBT**, PI: Dr. Prasad Kasturi, Budget: Rs. 42,50,000, Duration: 5 years  
**DST**, PI: Dr. Garima Agrawal, Co-PI: Dr. Rik Rani Koner, Budget: Rs. 37,96,642, Duration: 3 years  
**DST**, Dr. Manas Thakur, Prof. Y. Dittrich, Dr. Srikant Srinivasan, Dr. Shyam K. Masakapalli, Dr. Ramna Thakur, Budget: Rs. 99,29,444, Duration: 3 years  
**DST**, PI: Prof. Suman K. Pal, Prof. Tonu Pullerits, Budget: Rs. 54,25,000, Duration: 3 years  
**SERB**, PI: Dr. Baskar B., Budget: Rs. 38,40,000, Duration: 3 years  
**ICMR**, PI: Dr. Rajanish Giri, Budget: Rs. 5,66,500, Duration: 1 years  
**H.P. State Agriculture Marketing Board**, Dr. Mohammad Talha, Dr. Shyam K. Masakapalli, Budget: Rs. 17,88,000, Duration: 18 months  
**Swansea University (UK)**, PI: Dr. Venkata Krishnan, Budget: Rs. 7,16,087, Duration: 3 years

**Conferences/Workshops**

**Indo-UK symposium on “Fluxomics of Microbe and Plant Systems (FluxMAPS 2021)”**, held on March 24-25, 2021 jointly by IIT Mandi and University of Oxford, UK. The event is supported by MHRD-SPARC and UKIERI. Organizers: Dr. Shyam K. Masakapalli.



**International Virtual Workshop on Recent Advances & Applications of Conducting Polymer Nanostructures & Nanocomposites RA2CPNC 2021** (June 23<sup>rd</sup> to 25<sup>th</sup>, 2021) Under Indo-French SPARC Scheme of Ministry of Education, Organizers: Prof Prem Felix Siril

**Scholars Achievements and Placements**

**Dr. Naina Arora**, PhD Scholar, worked with Dr. Amit Prasad, received Nehru-Full Bright Scholarship 2021.  
**Dr. Shekhar Singh Negi**, PhD Scholar, working with Dr. Syed Abbas and Dr. Muslim Malik, received UMEA University postdoc fellowship, Sweden, 2021.  
**Dr. Vipin Kumar**, PhD Scholar, worked with Dr. Muslim Malik, joined post-doc in Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg, Germany.  
**Dr. Amir Mushtaq**, PhD Scholar, worked with Prof Suman K pal, received a Post-Doc position in Department of Mechanical and Aerospace Engineering, Missouri University of Science and Technology, USA, 2021.  
**Dr. Deepak Kumar and Dr. Nitin Sharma**, PhD Scholars, worked with Dr. Rajanish Giri, joined Post doc at Washington University in st louis.  
**Dr. Kundlik Gadhave**, PhD Scholar, worked with Dr. Rajanish Giri, joined Postdoc at John Hopkins University.  
**Dr. Juhi Pandey**, PhD Scholar, worked with Dr. Ajay Soni, joined Post-Doc at Korea Advanced Institute of Science & Technology, South Korea.  
**Dr. Saravanan, I-PhD Scholar**, worked with Dr. Aniruddha Chakraborty, joined post-doc at Hebrew University of Jerusalem, Israel.  
**Kumar Udit Saumya**, PhD Scholar, working with Dr. Rajanish Giri, received Overseas Doctoral Fellowship Program, 2021 to work in Purdue University.  
**Mr. Ajay Kumar** PhD Scholar, working with Dr. Venkata Krishnan, received postdoctoral position at The Open University, United Kingdom.  
**Scholars Ms. Divya Rawat, Mr. Jaskeerat Brar, Mr. Salman Ashraf, Mr. Bhisham Dev Verma** received **Best Teaching Assistant Award** on 12<sup>th</sup> Foundation Day IIT Mandi, 24.02.2021.

**PG Students Achievements and Placements**

**Ms. Purba Mukherjee**, M Tech BioTech student, received Khorana fellowship 2021.  
**Mr. Aditya Prasun** got PhD position in National Sun Yat-sen University, Taiwan  
**Ms. Chanjot Kaur** got PhD position at the University of Ottawa, Canada  
**Mr. Pavitra Srivastava** got PhD position at National Taiwan University, Taiwan  
**Ms. Srishti Gupta** joined PhD at the joint research program of A\*STAR Singapore/ Queensland University of Technology, Australia.  
**Ms. Anju** got PhD position at University of Glasgow, UK

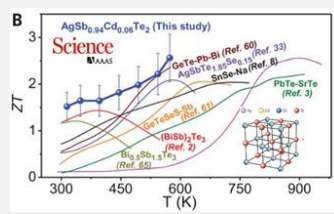
**Recent Patents**

**A process for i- line resist dissolution modulation using hydroxy-polymer**, Santu Nandi, Lalit Khillare, M. Yogesh, Suman Dolai, Chullikkattil P. Pradeep, Satinder Sharma, Narayan Tiwari, Paritosh Jain, Subrata Ghosh, Kenneth E. Gonsalves and Surinder Singh (2021). Patent application no. 202141007495 (Filed 23.02.2021)

**System and method for concentrating the waste and producing valuable gases from waste of treated water**, Shyam Kumar Masakapalli, Atul Dhar, Jyotika Thakur, Hemant Thakur, (2021). Patent application no. 202111015581 (Filed 30.03.2021)

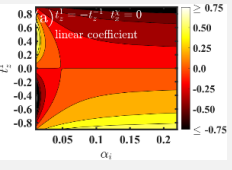
**Highlights of the Research and Development Activities**

**Enhanced atomic ordering leads to high thermoelectric performance in AgSbTe<sub>2</sub>**



**Dr. Ajay Soni and Niraj Singh** with their collaborators have studied the bench mark research on Cd doped AgSbTe<sub>2</sub> and achieved a highest thermoelectric figure of merit ZT ~ 2.4. *Science*. 371, 722-727(2021).

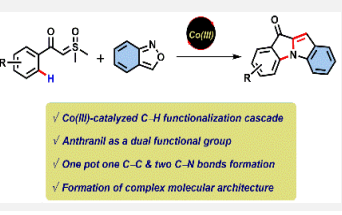
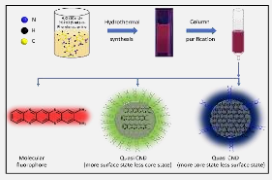
**Dr. Girish Sharma and Azaz Ahmad** investigated magnetotransport in Weyl fermions and identified a new and independent source that drives the system to switch the sign of magnetoconductance. *Phys Rev B* 103, 115146 (2021)



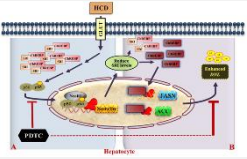
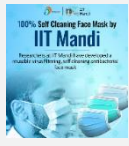
**Dr. Abbas and his group** studied the existence of a unique pseudo compact almost automorphic solution that is exponentially attractive for a generalized differential equation with feedback and time-varying delays. They showed a new criteria for the existence and convergence dynamics of pseudo compact almost automorphic solutions for some models that involves sum of nonlinear terms to satisfy a general condition. *J. Math. Anal. Appl.*, 495 (1) 124722 (2021).

**Dr. Sarita and her group** has observed and projected changes in extreme drought and food-prone regions over India under CMIP5 RCP8.5 using a new vulnerability index. They identified vulnerable regions may be useful for policymakers, agricultural planning, and water resource management *Climate Dynamics* (2021).

**Prof. Chayan K. Nandi and team** have recently uncovered a new avenue on the fundamental aspects of the photoluminescence mechanism in red emissive carbon nanodots (CNDs). Their work has solved the long-standing mystery of the origin of photoluminescence in red emissive CNDs. *Chem. Sci.*, 12, 3615 (2021)



**Dr. Amit Jaiswal group** developed a reusable, self disinfectable mask to protect from a wide range of infections, which received significant media coverage. *ACS Appl. Mater. Interfaces*, 13 (11), 12912 (2021)



**Dr. Prosenjit Mondal group** uncovered a previously unknown mechanism in regulating the biological response to high-carb diet which is useful in developing treatments for non-alcoholic fatty liver disease. *J. Biol Chem* 296, 100714 (2021)

**Ms. Kashmir Dey** got PhD position at Northeastern University, Boston.  
**Ms. Rakshita Saxena** got PhD position at IIT Kanpur  
**Mr. Apoorva Singh Deo** got PhD position at IIT Delhi.  
**Ms. Manisha Vasdev, Mr. Jagseer Singh, Mr. Tanay Gupta, Mr. Shivendu Prasad** have received placements in Tata Consultancy Services.