

**PROCEEDINGS**  
**THE 7<sup>th</sup> HSCA**  
**INTERNATIONAL CONFERENCE**  
**ON**  
**CHEMICAL, PHYSICAL AND BIOLOGICAL SCIENCES**  
**CHITKARA UNIVERSITY HIMACHAL PRADESH**  
**OCTOBER 20-21, 2019**



**JAI RAM THAKUR**



**CHIEF MINISTER  
HIMACHAL PRADESH  
SHIMLA-171 002**

### **Message**

It gives me immense pleasure to know that HIM Science Congress Association (HSCA) Himachal Pradesh is organizing an International Conference on 'Physical, Chemical and Biological Sciences' at Chitkara University, Solan on 20-21 October, 2019.

Science has made human life much more convenient and easier by saving labour and time with new technologies. Indeed, its series of discoveries have helped us to understand the nature and World around in a better way.

I hope this conference would provide an apt platform to scientists and experts to interact, share and improve their knowledge about the latest research and development in Physical, Chemical and Biological sectors.

I convey my good wishes for the grand success of the conference.

**(Jai Ram Thakur)**



मन्त्री,  
हिमाचल प्रदेश,  
शिमला - 171002.

No. - 4592 dt. 20/09/2019


**Message**

It is a matter of great pleasure that Him Science Congress Association Himachal Pradesh is organising its International Conference on 'Physical Chemical and Biological Sciences on 20-21 October, 2019 at Chitkara University, Solan, Himachal Pradesh. A souvenir is also being brought out by the organisers to commemorate the occasion.

State has been emphasising on the education sector by providing quality facilities and infrastructure to the students and academicians. Him Science Congress Association engages itself to remain consistence in helping faculty and researchers in to upgrade them. Association plays a pivotal role in development and innovative growth of society through its research works.

I am sure that the conference partially funded by DRDO and ISRO, would enhance knowledge of participants in the fast changing world by providing a common platform to discuss important issues and the souvenir would include inspiring and motivating articles for youngsters.

I wish the organisers a successful and knowledgeable event.

  
(Suresh Bhardwaj)



## MESSAGE

It is indeed a matter of immense honour for Chitkara University, Himachal Pradesh (NAAC) accredited, to organize a two-day International Conference titled 'The 7<sup>th</sup> HSCA (HIM Science Congress Association) International Conference on Chemical, Physical and Biological Sciences', jointly with the HIM Science Congress Association, on October 20 and 21, 2019.

Chitkara University, Himachal Pradesh (NAAC) accredited, has always been on the forefront of providing and fostering collaborations among scientists to improve the quality of education and learning. The result of such collaborations always brings improvements in technical developments and help in developing a better quality education system.

I would like to thank and welcome the distinguished academicians, researchers and scientists who are a part of this very significant conference. I hope that you all have an enriching experience at Chitkara University, Himachal Pradesh (NAAC) accredited.

My best wishes for a very successful and informative conference.

**Dr Ashok K Chitkara**

Chancellor

Chitkara University, Himachal Pradesh (NAAC) Accredited



## MESSAGE

I am delighted to know that Chitkara University and HIM Science Congress association, Himachal Pradesh, are jointly organizing a two day International conference titled “The 7<sup>th</sup> HSCA International Conference on Chemical, Physical and Biological Sciences” on October the 20<sup>th</sup> and 21<sup>st</sup>, 2019 at Chitkara University Himachal Pradesh.

Chitkara University is committed to enhancing and integrating the teaching learning environment which has a global focus. It is our endeavour to encourage our students and faculty to explore their potential and to the utmost satisfaction of all the stakeholders involved.

This conference will provide a platform to various academicians, researchers, industry experts and students to address the pressing issues in their fields, enabling them to share their domain knowledge with each other and interact with resource persons from other domains.

The theme chosen for the conference is of extreme importance as it is multidisciplinary in nature. It will act as a catalyst and serve as a platform where the scientists and engineers come together to understand the finer nuances of each others’ fields. This conference will not only provide scientific acumen, but also strengthen the bond among all the scientists.

I hope that this conference will be fruitful for all the participants from academia and industry. I extend my best wishes to the organizing team on the commencement of the international conference and wish that it becomes a huge success.

**Dr Madhu Chitkara**

Pro-Chancellor

Chitkara University, Himachal Pradesh



## MESSAGE

I am glad to know that HIM Science Congress Association is organizing 7<sup>th</sup> HSCA International Conference on **Chemical, Physical and Biological Sciences** on 20<sup>th</sup> -21<sup>st</sup> October, 2019 at Chitkara University, Himachal Pradesh.

Chitkara University is committed to provide continually enhanced and integrated learning environment with global focus to encourage our students and faculty to explore their full potential and to achieve total satisfaction of all our stakeholders.

I hope this conference would provide an appropriate platform to experts to interact, share and improve their knowledge about the latest research and development in the field.

I congratulate the organizers and hope that conference shall be attended by professionals to discuss thread bare all aspects to come out with effective modes for the benefit of mankind.

My best wishes for the resounding success of Conference.

**Dr. Varinder S. Kanwar**

Vice Chancellor

Chitkara University, Himachal Pradesh



**Prof. (Dr.) Deepak Pathania**  
**President, HSCA**

### **MESSAGE**

I am delighted to take this opportunity to welcome you all to this conference on behalf of Him Science Congress Association, Himachal Pradesh.

I am very much fretful about the bond between the science education and the needs of the society. The Conference purpose is to provide an opportunity for young researchers to interact and make the ideal platform for worldwide networking as it brings together renowned speakers and scientists. I laud for exciting and memorable events filled with enlightening interactive sessions.

The two-day conference program focuses on a broad range of issues and challenges in the field of basic sciences which will be weaved through the Keynotes Speakers, Plenary Speakers and Lecturers. Around 130 papers are divided into different oral and poster sessions.

I am sure that this conference will provide an international platform for the interaction and exchange of knowledge and expertise in basic science researches and practices between the scientists, researchers etc for future collaboration.

I am extremely grateful to Honorable Chancellor and Vice Chancellor of Chitkara University for providing venue for conference and taking keen interest support and encouragement at every stage for the organization of the Conference.

I would like to express my thanks to Dr. Sita Ram and his team of Chitkara University, members of organizing committee, Executive Council of HSCA, technical and supporting staff who have worked very hard to make this conference a great success.

I hope the deliberations made during the conference will benefit the participants to update their knowledge. I congratulate you for your dedication and lively participation.

I wish you all the success. Thank you for your attention.

A handwritten signature in blue ink that reads "Pathania". The signature is written in a cursive style with a circular flourish at the beginning.

**(Prof. Deepak Pathania)**



*Prof Nagesh Thakur*



**HIMACHAL PRADESH UNIVERSITY**  
**(NAAC Accredited 'A' Grade University)**  
**SUMMER HILL, SHIMLA-171005**

+91 177 2830950 (O)  
+91 9418102664(M)  
Email: ntb668@gmail.com

### **MESSAGE**

I am happy to know that Him Science Congress Association, Himachal Pradesh is organizing its 7<sup>th</sup> International Conference on 20-21 October, 2019 at CHITAKARA UNIVERSITY, Solan, Himachal Pradesh, India.

Science has progressed with a tremendous pace world over and our country has also made rapid strides in research and advancement. Day-by-day opportunity are increasing in this field, touching new horizons and bringing new laurels to the scientist. The whole scenario has changed extensively from the ancient days as now almost everything is dependent on Science & Technology. Eminent Indian scientists in the field of Physics, Chemistry, and Biology have set up high standard in the world.

I hope that fruitful deliberations would be held in the conference and hope that participants shall gain knowledge through interaction with the experts.

I wish the endeavour great successes.

  
**(Nagesh Thakur)**



# PLENARY SESSIONS

## KEY NOTE

### ABSTRACT NO - KN 101

#### BIOENGINEERING OF SMART POLYMERS FOR HUMAN HEALTHCARE

Bhuvanesh Gupta

Department of Textile Technology, Indian Institute of Technology, New Delhi-110016, India

*Email: bgupta@textile.iitd.ernet.in*

#### ABSTRACT

Hydrogels and hydrocolloids have been a boon to human healthcare due to their very innovative and beneficial life support features. Hydrogels have excellent biocompatibility, hydrophilicity, processability and sometimes they are bioactive in nature as well. Chitosan is one such example of multidirectional features within its structure. The development of polymers with bioactive coating is an important area of research focused on solving the problem of contamination by infection in wound care systems. A series of hydrogels based on polymethacrylic acid, polyvinyl alcohol, chitosan, pectin and dextran have shown enormous potential in wound care system. These hydrogels may be combined with appropriate ingredients to develop a system which would offer optimum healing to the wound.

Herbal drugs and essential oils may be incorporated into either natural hydrogels like chitosan, pectin, dextran and carboxymethyl cellulose by blending approach. A wide range of natural bioactive agents such as aloe vera, curcumin, sandal wood oil, clove oil and honey are available to develop excellent materials for wound care. These dressings have been evaluated for their efficiency in wound healing using mouse as the animal model. Excellent healing with minimum scar by hydrogel dressings have been observed with a complete control over the infection on the wound site.

Tissue engineering is a fascinating domain of biomedical technology where reconstruction of damaged body parts is accomplished. We initiated the work on tissue engineering of urinary bladder in collaboration with Hilborn at EPFL. Subsequently, we moved towards the blood vessel development using biodegradable constructs. This abstract describes the journey that started 15 years back to the new outcome in this area at IIT Delhi

Initial work was confined to the knotted constructs for bladder reconstruction. Subsequently we have attempted to mimic the native extracellular matrix of blood vessel using electrospun protein based vascular grafts that can improve the biocompatibility of the grafts compared to the clinically available inert grafts based on e-PTFE and Dacron. A novel approach in the development of nanofibrous tri-layered electrospun vascular scaffold based on gelatin hydrogels for blood vessel reconstruction has been proposed. These materials open up significant possibilities to repair damaged human organs.

#### *References*

1. S. Anjum, A. Arora, MS Alam, and B. Gupta, *Int J Pharmaceu*, 92, 508 (2016).
2. S. Anjum, A. Gupta, D. Sharma, A. Kapil, A. Sharma, and B. Gupta, *Mat. Sci. Eng. C*, 64, 157(2016).

**INVITED TALK  
ABSTRACT NO - IT 101**

**EMERGING SCENARIO IN ELECTRON MICROSCOPY**

**M.L. Sharma**  
**Punjab University, Chandigarh**  
*Email: mlsharna@gmail.com*

**ABSTRACT**

Every developing nation is trying to be positioned among the world leaders in creating the intellectual properties and trying to owning the highly sophisticated state of the art tools and techniques for their research.

For centuries, humans have tried continuously to improve their abilities of seeing invisible worldly objects. Microscopy traced back to Nimrud lens in ~710 BC to modern highly sophisticated ultra high resolution microscopes and developed techniques. Microscopy is the dynamic field of science.

It is clear that the world of probing matter with electrons, ions, neutron probes will experience revolutionary growth in capabilities in the coming decade from ultra-small to ultra-fast and to multi-dimensions. Probing materials' functionalities in-situ with high spatial- and temporal-resolution will continue to be a main theme. There are cross-cutting areas include developing bright electron sources, fast detectors and dedicated spectrometers. Electron microscopy has been playing an important role in research and applied development of nanotechnology, together with the development of an analytical TEM that has a field emission gun, an aberration corrector and a function of scanning TEM (STEM). It has been

possible to extract high quality information on substance and materials, owing to the development of electron detectors and imaging techniques of STEM. Objects of EM observation have been widely spread after the development of related techniques such as preparation of EM samples and controlling of specimen environment (heating, cooling, gas pressure, stress application etc.). The recent trend of electron microscopy and demonstrate some applications to green nanotechnology which is closely related to development of renewable energy, energy saving, energy storing, saving of rear resource, removal of harmful substance from air and water and so on.

Four-dimensional ultrafast electron microscopy (4D-UEM) is a novel analytical technique that aims to fulfill the long-held dream of researchers to investigate materials at extremely short spatial and temporal resolutions by integrating the excellent spatial resolution of electron microscopes with the temporal resolution of ultrafast femtosecond laser-based spectroscopy.

The flexibility of 4D-UEM lies in the fact that it can be used in both the scanning (S-UEM) and transmission (UEM) modes depending upon the type of electron microscope involved. While UEM can be employed to monitor elementary structural changes and phase transitions in samples using real-space mapping, diffraction, electron energy-loss spectroscopy, and tomography, S-UEM is well suited to map ultrafast dynamical events on materials surfaces in space and time. This review provides an overview of the unique features that distinguish these techniques and also illustrates the applications of both S-UEM and UEM to a multitude of problems relevant to materials science and chemistry.



**CTEM**



**HRTEM**



**SEMs**

**INVITED TALK  
ABSTRACT NO - IT 102**

**BIODIVERSITY AND CONSERVATION OF PROTECTED FAUNA**

**Kailash Chandra**

Zoological Survey of India, M-Block, New Alipore, Kolkata-700053, West Bengal, India

*Email:kailash611@rediffmail.com*

**ABSTRACT**

‘Biological diversity’ or ‘Biodiversity’ is the variety and variability of life on Earth. It helps us to determine the variation at the genetic, species and ecosystem level. So, it relates to exploration, identification and their preservation of the fauna and flora. India is one of the mega-diversity countries in the world that is rich in biodiversity. The areas rich in species diversity are called hot spot areas, many of them are endemic and under constant threat of being overexploited. India has four biodiversity hotspots i.e., the Himalayas, the Western Ghats, Indo-Burma region and Sundaland (includes Nicobar group of islands). On world basis, 1,700,689 species have been recorded from Protozoa to Mammalia. Out of which, 1,01,681 species belonging to India which is about 6.5% of the world diversity. IUCN has evaluated a total of 5,623 species of protected fauna in different categories in India. Of which, 78 species are critically endangered, 209 species are endangered, 396 species are vulnerable, 336 species are near threatened, 02 species are conservation dependent, 787 species are data deficient and 3,814 species are in the least concerned category. As per CBD (Convention of Biodiversity) Article 7(a), identification of essential biological diversity component of the nation, their conservation and sustainable utilization towards this, ZSI has documented faunal diversity of 23 states, and union territories. Zoological Survey of India has played a significant role in formulation and amendment of Wildlife (Protection) Act, 1972, Biodiversity Act, 2002, MARPOL, Coastal Zone Management Act, Forest Act etc.

The aspects of conservation vis-a-vis sustainable development are being discussed at various national as well as international forum. From conservation point of view, human should treat himself as a biodiversity component and respect each and every organism if conservation and sustainable development is our ultimate goal. Human can not continue to exist until activities and processes that degrade the environment and result in loss of biodiversity are corrected through a multi-dimensional approach, which involves in various dimensions like environmental, economic, social, political, cultural, academic and spiritual etc. If human stops respecting our mother nature and conserve biodiversity, he might have to face the extinction like Dinosaurs.

**INVITED TALK  
ABSTRACT NO - IT 103**

**APPLICATIONS OF MATHEMATICS IN SCIENCES**

**S K Tomar**  
**Punjab University, Chandigarh**  
*Email: sktomer66@gmail.com*

**ABSTRACT**

Mathematics is branch of science which has so many applications in real life. It involves calculation, computation, solving of problems etc. It is a science of numbers and space and is exact, systematic and logical subject.

Today mathematics deals with data, measurements and observations from science, with inference, deduction, and with mathematical models of natural phenomena and of social systems.

Although all careers require a foundation of mathematical knowledge, some are mathematics intensive. More students must pursue an educational path that will prepare them for lifelong work as mathematicians, statisticians, engineers, and scientists.

So here in this talk I would like to discuss about role of mathematics in our day today life and in sciences like chemical, Physical and biological sciences. How mathematical modeling is helpful in sciences to find concrete solution of problems that exist in nature or in real life. Mathematics has applications in solving public transport problems, traffic network using matrices, population problems, image processing, analysis of electrical circuits, transforming signals, study of heat transfer, vibrations in a string, traveling salesman problem, coloring of maps etc.

**INVITED TALK**  
**ABSTRACT NO - IT 104**

**DEVELOPMENT OF ORGANIC CHEMOSENSORS AND DESIGN STRATEGY FOR  
ORGANIC-INORGANIC HYBRID  
NANOMATERIALS FOR MONITORING CHEMICAL POLLUTANTS**

S. K. Mehta, Devika Vashist and Kamaljot Kaur

Department of Chemistry and Centre of Advanced Studies in Chemistry,

Panjab University, Chandigarh-160 014, India

*Email: skmehta@pu.ac.in*

**ABSTRACT**

Increasing industrial and technological competition is one of the chief reasons for the destruction of environmental resources. Among the enormous issues being faced globally, obtainability of safe and clean water, which is one of the basic amenities to sustain, is still a challenge. With innovatory advances in multidisciplinary research, a diverse range of organic chemosensors has been emerged as detectors for the continuous monitoring of hazardous species<sup>1-3</sup>. The vast interconnection of analytical and synthetic chemistry has given rise to pioneering developments in the understanding of electronic transitions and spectroscopy of these probes. By integrating an organic layer over the surface of nanoparticles, the process of electron-hole combination takes place in such a way to produce altered intraband and interband relaxation pathways. Furthermore, the easy covalent linking of the various heteroatom functionalized long hydrocarbon chains can not only control the specific optoelectronic features but also offers some kind of restricted steric organization that manifests the selective binding of the target molecules<sup>4-5</sup>. Our objective is to explore new pathways for synthesis of organic chemosensors and modulating hybrid organic - inorganic nanometric interface properties through the combination of efficacious, yet simple fabrication techniques. In such systems, the guest binding event produces change in the  $\pi$  electron cloud conjugation or geometry of the composite that further invokes detectable chromogenic or fluorogenic transitions. The success of this core-shell configuration is then optimized for rapid and portable quantification of various chemical analytes and environmental monitoring, leading to development of more selective receptors.

**INVITED TALK**  
**ABSTRACT NO - IT 105**

**UNUSUAL BEHAVIOR OF CHALCOGEN CLUSTERS**

Raman Sharma  
Department of Physics, Himachal Pradesh University, Shimla-171005 (H.P) India.  
*Email: bramans70@yahoo.co.in*

**ABSTRACT**

In this talk discussion will be on the structural, Electronic and nature of bonding in the clusters. We have studied Se-Te nano clusters in pristine and mixing. Being planner structures they possesses unusual stability. Stability of these planner structures have been elucidated in terms of covalent bandings favored by them. They discern order disorder pattern reported for their unusual behavior are observed in below HOMO level. First principle study has been done of these cluster using USPEX and VASP code.

**INVITED TALK**  
**ABSTRACT NO - IT 106**

**REVISITING QUARK LEPTON COMPLEMENTARITY MODEL-ITS  
PRESENT STATUS**

B. C. Chauhan  
Department of Physics & Astronomical Science, School of Physical & Material Sciences,  
Central University of Himachal Pradesh (CUHP), Dharamshala, Kangra (HP), India 176215  
*Email: chauhan@associate.iucaa.in*

**ABSTRACT**

The past few decades high energy physics have shown a phenomenal growth by providing us some robust evidence that the neutrinos are massive, the lepton flavours are mixed and they oscillate. Even after 60 years of studying neutrinos, several mysteries remain unsolved, that could provide windows into physics beyond the Standard Model. One out of those comes up as complementarity between the quark and lepton mixing angles is noticed. Since the quarks and leptons are fundamental constituents of matter and also that of particles'

Standard Model(SM), the complementarity between the two families is seen as a consequence of a symmetry at some high energy scale. This complementarity popularly named 'Quark-Lepton Complementarity' (QLC). The relation is quite appealing to do the theory and phenomenology, however, it is still an open question, what kind of symmetry could be there between these fundamental particles of two sectors. The possible consequences of QLC have been widely investigated in the literature. In particular a simple correspondence between the  $U_{pmns}$  and  $U_{ckm}$  matrices has been proposed in terms of a correlation matrix( $V_c$ ).

In this work, we will discuss the QLC model and all its possible outcomes that have been widely studied in the past few years. Along with that a hint about the relevance of the sterile neutrinos with the quark-lepton unification and the QLC model have also been discussed.

## ABSTRACTS

<b>CHEMICAL SCIENCES - ORAL PRESENTATIONS</b>		
<b>Abstract Number</b>	<b>Authors Name</b>	<b>Title of Paper</b>
CH-101	Kovuru Gopalaiah	Metal-Catalyzed Oxidative Annulations for Constructing N-Heterocycles
CH-102	Tejas P. Joshi	Applications of amphiphilic molecules: Surfactant and block copolymers
CH-103	Vandana sethi, Deepak Pathania	Comparison of microwave induced grafting of MA/AA and MA/AAM binary monomers onto Luffa cylindrica fibre
CH-104	Pankaj Raizada, Pardeep Singh	Coupling of AgBr/VO with phosphorus doped g-C <sub>3</sub> N <sub>4</sub> to fabricate a ternary Z scheme photocatalyst for phenol photodegradation
CH-105	Pooja Shandilya, Pankaj Raizada and Pardeep Singh	Fabrication of highly dispersed fluorine doped graphene with SmVO <sub>4</sub> nanoparticles based for photocatalytic removal of phenolic compounds from water and bacterial disinfection
CH-106	Kamal Kishor Thakur	MXenes, promising materials with wide application spectrum
CH-107	Monika Verma, Ruchi Bharti* and Renu Sharma*	Piperidine Catalyzed Multicomponent Synthesis of 3-Methyl-4-arylmethylene-isoxazol-5(4H)-ones in Aqueous Medium: An Organocatalyzed Green Synthetic Approach
CH-108	Neelam Thakur	Cytogenetic Evaluation of an Indian Boy with Ring Chromosome 14 Mosaicism: A Case Study and Literature Review
CH-109	Ruchi Bharti*	Natural Acid catalyzed Aqua Mediated Multicomponent Synthesis of Tetrahydropyridines and Its Antioxidant Activities
CH-110	Sudhanshu P. Singh* <sup>1</sup> , Rajendra N. Goyal <sup>2</sup>	Determination of Adenine and Guanine at Fullerene Modified Electrodes
CH-111	Suvarcha Chauhan and Rajat Ghalta	Effect of Tetraalkylammonium Based Ionic Liquids on the Volumetric and Compressibility Behavior of Amino Acids in Aqueous Medium
CH-112	Sangeeta Sharma, Rimpi Mehani Nee Chopra, Veenu Chugh	Metal tetraaza complexes: synthesis, structural and antibacterial analysis
CH-113	Anju Singh and Kamal Kishor Thakur	In-Silico Analyses on the Interaction between Eugenol and Bovine Serum Albumin (BSA)
CH-114	Anuradha Pathania and Kamal Kishor Thakur	Molecular Docking Analyses of the Interactions between Timolol Maleate (TM) and Human Serum Albumin
CH-115	Anjna Thakur	Environmental Sociology: A Study
CH-116	Arush Sharma, Deepak Pathania, Harpreet Kaur	Isotherm, kinetic and thermodynamic study on the bioremediation of cypermethrin (CM) from water system using agro-waste material
CH-117	Rashmi Dhawan	Carbon Nanomaterials as Sensors for Monitoring of Water Pollutants

CH-118	Zaheer Ud Din Sheikh and Deepak Pathania	Green Synthesized ZnO nanocomposite for photocatalytic degradation of Chlorpyrifos under sunlight irradiation
CH-119	Chetna Verma, Deepak Pathania, Poonam Negi, R. S Verma, Bhuvanesh Gupta	Functional Designing of Tragacanth Gum Nanogels for Anticancer Drug Delivery
CH-120	Ajay Sharma, Ajay Kumara	OH modified BN- Cu <sub>2</sub> O/CoFe <sub>2</sub> O <sub>4</sub> ternary photocatalysts for the degradation of Brown HT
CH-121	Vikrant Sharma, Jogindra Devi	Design of stomach specific floating CMC-cl-ALG hydrogel beads for sustained release of ranitidine to cure GIT disorders
CH-122	Kajal Sharma, Ajay Kumar	Photoassisted Persulphate activated of magnetic biochar for the degradation of 2-chlorophenol
CH-123	Manisha Chandel, Ajay Kumar	NH <sub>2</sub> modified magnetic RGO for photo catalytic and adsorption removal of 2-4-D
CH-124	C. Prakasam, Saravanan R,	Environmental Flow Monitoring – An Alternate Solution
CH-125	Arun Lal Srivastav	Negative Impacts of Climate Change on Agriculture and Water Resources
CH-126	Nirankar Singh	Analysis of water quality parameters in rural location of Karnal Haryana.
<b>CHEMICAL SCIENCES - POSTER PRESENTATIONS</b>		
CH-201	Lata Rani, Jyotsna Kaushal, Arun Lal Srivastav	Potential of biochar adsorbents in the removal of toxic metals (arsenic and chromium) from Contaminated water: A review
CH-202	Ravishankar Kumar, Shilpa Sharma, Sunil Mittal	Spatial distribution of groundwater quality with association of potential health risk in agri-intensive Siwalik Hills range of Punjab, India
CH-203	Arun Kumar, Sunil Dhar, M. Prashanth	A Review of Integrated Remote Sensing and GIS Based Approaches for Soil Loss Estimation
CH-204	Asha Singh and Sunil Kumar	Aquatic plant Adsorption of Hexavalent Chromium using <i>Salvinia molesta</i>
CH-205	Ishita Gupta and Punita Sharma	Anti-diabetic and anti-oxidant activity of berberine isolated from <i>Berberis lycium</i> of Himachal Pradesh region
CH-206	Punita Sharma and Ishita Gupta	Analysis of chemical composition of essential oil extracted from aerial parts of <i>Tanacetum gracile</i> using GC-MS
CH-207	Lalit K. Gularia	Free Radical Graft Copolymerization of Monomers Onto Delignified Cellulosic Fibre
CH-208	M. Anand*and A. Taneja	Prenatal Exposure to Dichlorodiphenyltrichloroethane and Hexachlorocyclohexane and Risk of Preterm Birth
CH-209	ManitaThakur, BaldevSingh, AnkitaSharma	Facile synthesis of Starch-Ce(IV) sulphatoarsenate nanocomposite and enhanced photocatalytic degradation of methyl red
CH-210	Shashi Kant Sharma and Inesh Kumar	Thermodynamic, conductometric and acoustic studies of Antidiabetic Drug Metformin Hydrochloride with aqueous Dulcitol at different temperatures



CH-211	J. H Trivedi	Kinetics and Reaction Mechanism of KPS Initiated Graft Copolymerization of Acrylonitrile onto Sodium salt of Partially Carboxymethylated Sodium Alginate
CH-212	Tokuma Getahun, Vinit Sharma, Deepak Kumar and Neeraj Gupta	Chemical compounds identified from the roots of Aloe debrana Christian and their antioxidant and antibacterial activities
CH-213	Vikas Nathan, Shashi Kant Lomesh	Effect of MgCl <sub>2</sub> and CaCl <sub>2</sub> on volumetric, compressibility and acoustic behaviour of doxycycline hyclate drug in aqueous solution at different temperatures T=(293.15-313.15)K
CH-214	M. Sharma and D.S. Rana	A Relative Study on Micellization Behaviour of conventional (SDS and DTAB) and Gemini Surfactant (12-2-12) in Aqueous Solutions of Metformin Hydrochloride at Varying Temperatures
CH-215	Shashi Kant Rai and Sunil Dhar	Impact of El-Nino & Western Disturbances on the Reservoir Health of the Glaciers of NW Himalayas
CH-216	Bhim Singh Rathore	Synthesis of styrene-tin (IV) phosphate nanocomposite (ST/TPNC) ion exchanger and application in the degradation of methylene blue by photocatalysis.
CH-217	Manali Somani, Sadiya Anjum, Samrat Mukhopadhyay and Bhuvanesh Gupta	Functionalization of Polyurethane for Antimicrobial Urinary Catheter
CH-218	Amit Kumar Sharma, Balbir Singh Kaith, Bhuvanesh Gupta, Uma Shanker	Fabrication of polyacrylamide grafted green nanocomposite scaffold- Investigation of antibacterial properties
CH-219	Ankita Sharma, Chetna Verma, Amlan Gupta, Samrat Mukhopadhyay, Bhuvanesh Gupta	Preparation of Sodium Alginate/Carboxymethyl cellulose hydrogel system for Biomedical Application
CH-220	Asha Sharma and Sandeep Arya	Cu-Ag bimetallic nanowires as an efficient uric acid sensor
CH-221	Atul soni, Deepika Kaushal, Sunil kumar, Manish Kumar	Centellaasiatica leaves used for synthesis of Copper oxide nanoparticles by using Co-precipittion method
CH-222	Ganesh Singh, M. S. Chauhan	Solution Combustion Synthesis of Ni doped CdO Nano-structures for Photocatalytic Degradation of Methylene Blue Dye.
CH-223	Manoj Kumar, M. S. Chauhan	Lanthanum Doped ZnO Nanomaterials for Photocatalytic Degradation of Dye Molecules
CH-224	Pratibha Singh, Chetna Verma, Amlan Gupta and Bhuvanesh Gupta	Development of carrageenan-based hydrogel system for wound healing
CH-225	Priya Bhalla, Balbir Singh Kaith, Uma shanker, Bhuvanesh Gupta	Green synthesis of photocatalytic nanocomposite and its application in removal and degradation of organic pollutants
CH-226	Sweety Verma and Sanjeev Maken	Thermodynamics of renewable fuel oxygenate: Excess molar volume
CH-227	Manpreet Kaur, Pardeep Singh, Sourav Gautam	Photocatalytic mineralization of ampicillin antibiotic developing bentonite supported CaFe <sub>2</sub> O <sub>4</sub>

CH-228	Sugandha Sangar, Virender Kumar Vats, S.K. Mehta, Kulvinder Singh	Biosynthesis of silver nanocrystals, their kinetic profile from nucleation to growth and optical sensing of mercuric ions
CH-229	Shalini Verma, Palki Sahib Kaur, Muskan Kapoor, Oshien	Green Synthesis of Silver Nano particles and their Application in Dental Filling Material
CH-230	Ramesh Kumar	Facile Synthesis, Photocatalytic, Chemical Sensing and Magnetic Properties of Mn <sub>x</sub> Zn <sub>1-x</sub> O Nanoparticles
CH-231	Kirti Sharma, Naresh Chandel Sonu, Pankaj Raizada, Pardeep Singha	Magnetically separable ZnO/ZnFe <sub>2</sub> O <sub>4</sub> and ZnO/CoFe <sub>2</sub> O <sub>4</sub> photocatalysts supported onto nitrogen doped graphene for photocatalytic degradation of toxic dyes
CH-232	Vasudha Hasija, Abhinandan Kumar, Pankaj Raizada, Pardeep Singh	Green synthesis of carbon quantum dots supported AgI/ZnO/phosphorus doped graphitic carbon nitride using bamboo leaves extract for photodegradation of 2,4-dinitrophenol.
CH-233	Pardeep Singh, Sheetal Sharma	Graphitic carbon nitride modified magnetic ZnFe <sub>2</sub> O <sub>4</sub> and CoFe <sub>2</sub> O <sub>4</sub> photocatalysts supported onto N-doped graphene with enhanced photocatalytic activity towards toxic dyes mineralization
CH-234	Anita Sudhaik, Prachi Thakur, Pankaj Raizada and Pardeep Singh	Photocatalytic degradation of 2, 4-dimethyl phenol via Silver phosphate modified phosphorus and sulphur co-doped graphitic carbon nitride photocatalyst
CH-235	Ashima Dogra, Deepika Sharma, Neeraj Gupta	Synthesis of Piperidinium-Based Quaternary Ammonium Salts and Their Applications in Drug Delivery
CH-236	Pardeep Singh, Sonu, Pankaj Raizada, Pankaj Thakur	Improved photocatalytic activity and stability of AgBr/BiOBr/graphene heterojunction for phenol photodegradation

#### PHYSICAL SCIENCES - ORAL PRESENTATIONS

Abstract Number	Authors name	Title of paper
PH-101	Ankush, Rishu Verma, and B. C. Chauhan	SNO Constraints on Sterile Neutrino Flux in Solar Neutrino Data
PH-102	Arvind Kumar, K.K. Sharma, Subhash Chand and Ashwani Kumar	Electrical characterization of Ni/p-Si (100) Schottky diodes
PH-103	Bikram Singh and Sandeep Arya	Preparation and Investigation of NaYF <sub>4</sub> /TiO <sub>2</sub> Core/Shell Nanoparticles for Their Optoelectronic Properties
PH-104	Chanchal Chawla	Study of Cosmic Acceleration of the Universe with Variable EoS Parameter & Deceleration Parameter
PH-105	D.S. Rana and N. Thakur	MoS <sub>2</sub> and rGO-MoS <sub>2</sub> Hybrids as Potential scaffold for the fabrication of para nitrophenol sensor
PH-106	Jyoti Gupta and Sandeep Arya	Electrochemical Sensing of Ammonia Solution Using Solvothermally Synthesized Tin Oxide nanoparticles

PH-107	Kuldeep Singh	Quantitative study of the weak Intermolecular Interaction energies in polymorphs of 3-(Bromoacetyl)coumarin
PH-108	Madhurika Mahajan	Microstrip Patch Antenna for Agriculture
PH-109	Preeti Verma and S. K. Khosa	Theoretical overview of Signature-inversion and Signature-splitting in some doubly-odd nuclei in A~70 mass region
PH-110	Safiqul Islam & Praveen Kumar	Gravitational model of compact spherical Reissner-Nordström-type star under f (R, T) gravity
PH-111	Shammi Kumar and Nagesh Thakur	Structural and Optical Studies of Environmental friendly Sodium Potassium Niobate (K <sub>0.5</sub> Na <sub>0.5</sub> NbO <sub>3</sub> ) Ceramic prepared by Solid State method
PH-112	Ritesh Verma, Rahul Kalia, Allah Dekama Jara, Virender Pratap Singh, Ram Parkash Dwivedi and Rajesh Kumar	A study on piezo-phototronic effect for increasing efficiency of solar devices
PH-113	D. Thakur, A. Sharma and D. Singh	Solution Combustion Synthesis of Silver-doped Zinc Oxide Nanostructures: Efficient Scaffolds for Detection of p-nitrophenol
PH-114	Rohit Jasrotia, Virender Pratap Singh and Rajesh Kumar	Synthesis and Characterization of sol-gel synthesized Ce <sup>3+</sup> and Ni <sup>2+</sup> substituted Mg nanoferrites
PH-115	Anoop Singh and Sandeep Arya	Morphological and Optical Characterization of Sol-Gel Synthesized Ni doped ZnO nanoparticles
PH-116	Manoj K Tiwari, Vijay Kumar Garg, Arun Lal Srivastav, Ajay Sharma, and Varinder Singh Kanwar	Synchrotron based XRF evaluation of agricultural soil for heavy metal contamination
<b>PHYSICAL SCIENCES - POSTER PRESENTATIONS</b>		
PH-201	Anil Thakur, Pradeep Malhotra, Rajinder Kashyap	Isothermal Bulk Modulus and Elastic Constants For NaPb Binary Liquid Alloy using First Principle
PH-202	Gazal Sharma and B. C. Chauhan	Revisiting Quark Lepton Complementarity Model-Its Present Status
PH-203	Kirti Singha, Rajesh Kumar, Monika chandel, Virender Pratap Singh.	Magnetic and Mössbauer investigations of rare earth metal substituted CoZ <sub>2</sub> -type Nano hexaferrites
PH-204	M. Sharma and D.S. Rana	A Relative Study on Micellization Behaviour of conventional (SDS and DTAB) and Gemini Surfactant (12-2-12) in Aqueous Solutions of Metformin Hydrochloride at Varying Temperatures
PH-205	Rishu Verma, Ankush, and B. C. Chauhan	Planck Mission Constraints on Relic Density of Neutrinos
PH-206	Mamta Shandilyaa, Gun Anit Kaura	Low temperature crystal growth of lead-free complex perovskite Nano-Structure by using Sol-gel hydrothermal process

PH-207	Satvinder Kour, Nisha Kumari, Gurpreet Singh, Ankush Chauhan, Ritesh Verma and Rajesh Kumar Sharma	Investigation of Structural, Morphological and Elemental distribution of Al <sup>3+</sup> and Cr <sup>2+</sup> doped NiCoCu Magnetic Nanoparticles Synthesized by Sol-gel Auto Combustion Method
PH-208	Ankush Chauhan, Swati, Anand Sharma, Mamta Shandilya, Saurabh Kulshrestha and Rajesh Kumar	Structural and morphological studies of Ag doped ZnO nanostructure synthesized from Moringa oleifera extract by green synthesis method
PH-209	Ritesh Verma, Anil Kumar, Mamta Sharma, Sameer S Rahatekar, Rajesh Kumar	A comprehensive study on exergy analysis of different solar thermal collectors
PH-210	Satvinder Kour, Nisha Kumari, Gurpreet Singh and Rajesh Kumar	A Study on Synthesis, Properties and Applications of Ferrites
PH-211	Nisha Kumari, Satvinder Kour, Gurpreet Singh, Ankush Chauhan, Ritesh Verma and Rajesh Kumar	A Study on Bimetallic Nanoparticles for Solar Energy Applications
PH-212	Monika Chandel, Virender Pratap Singh and Kirti Singha	Electric and Dielectric Properties of Rare Earth Metal Substituted Strontium Y-Type Hexaferrite for High –Frequency Applications

#### MATHEMATICAL AND ENGINEERING SCIENCES - ORAL PRESENTATIONS

Abstract Number	Authors Name	Title of Paper
MS-101	Vijayata Pathania and Pankaj Dhiman	Waves in Thermoelastic Plate Carrying Voids Cladded with Layers of Inviscid Liquid
MS-102	Preetpal singh and Dipa Sharma	Development of medical Fuzzy Expert System
MS-103	Yogesh Sharma and Poonam Sharma	A Hyperspace And Its Separation Axioms
MS-104	Manoj Kumar Dhiman and Ashish Kumar Sharma	Effect of Circular Thickness variation on Vibration of Non-Homogeneous Square Plate in two Dimensions
MS-105	Rajni Bala	Naturality Between Generalized Topologies and Strongly Generalized Closure Operators
MS-106	Anshu Sharma	Piezoelectric Mems Energy Harvester For Self Powered Devices
MS-107	Satish Kumar	On Set of Hadamard Rhotrix and its Design of Binary Linear Block Code (BLBC)
MS-108	Manisha Aggarwal	A Review of Graphene: Properties and its Applications
MS-109	Sreedevi , Mohit Kumar Kakkar and Jasdev Bhatti	Factors Affecting the Learning Process of Mathematics and Statistics among the students of Pharmaceutical Sciences and some Probable Solutions.
MS-110	Ashu Taneja, Amandeep Kaur and Astha Yadav	Antenna Selection in Cooperative Wireless System with Hardware Impaired Relay
MS-111	S R Sharma	Bounds Between First Three Power Means About Origin For Continuous Probability Distribution
MS-112	Madhu Gupta	Some Inequalities Involving Standard Deviation And Range

MS-113	Ravi Datt, Anil Kumar and Rajesh MaithanI	Taguchi approach for optimization of geometric and flow parameters of heat exchanger tube fitted with combined solid ring and square wing twisted tape inserts.
MS-114	Suneha and Neha Kumra	Improving upon 'Teacher Education' to Improve the 'Teacher's Competency', a leading Factor affecting the Students' Interest in Mathematics.
MS-115	Shefali Batra	Reliability and Availability of the Printed Circuit Boards Manufacturing System considering repairs by internal/external engineers and arbitrary arrival time of external engineer
MS-116	C. Prakasam and Aravinth.R	Landslide Vulnerability Mapping Using Analytical Hierarchical Process – A Case Study on Rampur Tehsil, Himachal Pradesh
MS-117	Komal Sohi, Ashok Kumar, Arun Lal Srivastav, Tapas Sharma	Entropic Classification of Research in the field of Decision Sciences.
MS-118	Naresh Kumar and Pankaj Thakur	Elasto-plastic density variation in a deformable Disk
MS-119	Pranav Goyal and Neeraj Kumar	A Comprehensive Study on Manufacturing Bio-Plastic Using Green Waste
MS-121	Neeru Gupta and Pankaj Thakur	Elasto-plastic Deformation in an isotropic material disk with shaft and having variable Load
MS-122	Srishti Gupta, Ishan Soni and Lipika Gupta	Go Language: Features and Comparison
MS-123	Reetu Malhotra	Availability Analysis of a Cold Standby Industrial System with Inspection and Varying Demand
<b>MATHEMATICAL AND ENGINEERING SCIENCES - POSTER PRESENTATIONS</b>		
MS-201	Suman and Neeraj Gandotra	A brief review on the Intuitionistic Fuzzy set in regarding with the Multi Criteria Decision Making Application
MS-202	Monika Sethi and Pankaj Thakur	Modelling in creep deformation in a transversely material disk having variable density

<b>BIOLOGICAL SCIENCES -ORAL PRESENTATIONS</b>		
<b>Abstract Number</b>	<b>Authors Name</b>	<b>Title of Paper</b>
BS-101	Narender Sharma	Significance of genitalia in the identification of Ypthima Hübner species (Lepidoptera : Nymphalidae: Satyrinae) from Uttarakhand
BS-102	Devi Gopinath, Rinku Sharma, Birbal Singh, Gauri Jairath and Gorakh Mal	A study on prevalence of ectoparasitism in migratory small ruminants of H. P.
BS-103	Manpreet Singh Pandher & Deepti Garima	New record of Dipseudopsis doehleri (Ulmer, 1929) (Trichoptera: Dipseudopsidae) from Manipur

BS-104	Shilpi Sharma and Jyoti Vakhlu	Real-time PCR expression analysis of genes involved in pathogenicity in three-way interaction between the host plant Saffron, pathogenic fungus and biocontrol strain
BS-105	P.C. Pathania, Apurva Das and Kailash Chandra	Preliminary Study on the Moth Fauna (Lepidoptera) of Singalila National Park, West Bengal
BS-106	Pawan Kumar and Subhash Chander	Study on Biocontrol Practices of Insect-Pests of Teak in Central India
BS-108	Manpreet Singh Pandher	Trichoptera diversity from Suntaley Khola Biodiversity Camp, Neora Valley National Park of West Bengal.
BS-109	Nitin Sharma, Harpreet Kaur and Mehak	Isolation and Screening of bacterial isolates for various industrially important enzymes
BS-110	Vikas Kumar, Rajeev Kumar, Nitin Sharma, Rajan Rolta, Uma Ranjan Lal, Anuradha Sourirajan, Kamal Dev	Biological activities of <i>Thalictrum foliolosum</i> : An Unexplored medicinal herb from Himachal Pradesh
BS-111	Sahil Sharma, Mandheer Kaur, Ankit Magotra and Palki Sahib Kaur	Polymorphism of the low-density lipoprotein receptor gene (LDL) in Individuals associated with Cardio Vascular Disease (CVD)
BS-112	Sonica Sondhi, Nakul	Microwave Assisted Enzymatic Hydrolysis of Kitchen Waste for Bioethanol Production
BS-113	Jagdeep Verma	Mycoheterotrophic Orchids of Himachal Pradesh
BS-114	Manish Dogra, Neha Sharma and Prashant Gupta	A Review on Radon and its Significance in Radioactive Mineral Exploration and Deciphering Active Tectonics and Earthquake Prediction
BS-115	Hemlata, Gulab Singh and Shiv Kumar Giri	Role of Antioxidant Gene in Genotoxicity from Pesticide
BS-116	Rahul Singh, Rinku Sharma, Punam Soren, Gorakh Mal, Birbal Singh, Devi Gopinath	Behavioral, haemato-biochemical and histopathological evaluation of subcutaneous acute toxicity study of saponin-enriched fractions from fruits of <i>Asparagus adscendens</i> Roxb. in Swiss albino mice
<b>BIOLOGICAL SCIENCES-POSTER PRESENTATIONS</b>		
BS-201	Sarita Kumari and Jawed Ahmed Khan	Ichthyofaunal Diversity and Water Quality in the Motia Reservoir, Bhopal, India
BS-203	Madhu Rana and M.S. Thakur.	Taxonomical studies of insect pollinators on buckwheat ( <i>Fagopyrum acutatum</i> ), of different altitudinal population in Shimla Hill, Himachal Pradesh.
BS-204	Poonam Dhiman and M.S.Thakur	Diversity and Distribution of Insect Pollinators of <i>Prunus persica</i> (Linnaeus) at Rajgarh, Sirmour District, Himachal Pradesh
BS-205	Himani Kaushal and M.S.Thakur	Study the Biology of Pests of Tomato, Cabbage and Pomegranate in Kullu Valley, Himachal Pradesh

BS-206	Diksha Kumari, Smriti Batoye	Cypermethrin induced behavioural changes in the fish <i>Cyprinus carpio</i>
BS-207	Aruna Katoch and M.S Thakur	Diversity, distribution and relative abundance of insect pollinators of <i>Berginia ciliata</i> and <i>Vinca major</i> in Shimla Hills of Himachal Pradesh
BS-208	Simarjit Kaur, K. Rajmohana & Manpreet Singh Pandher	Morphological studies on antennal sensilla in some selected species of family Myrmeleontidae (Insecta: Neuroptera)
BS-209	Anjana Chauhan and M.S. Thakur	Diversity, distribution and relative abundance of insect pollinators of Mango and Litchi in Kyarda Doon Valley, Himachal Pradesh
BS-210	Sakshi Sharma and Jyoti Vakhlu	Metatranscriptome sequencing of healing clay: insights into the gene expression and functional potential of microbes in skin disease management
BS-211	Radha, Sunil Puri, Ashok Pundir	Ethnoveterinary medicines used by tribal migratory shepherds in Kinnaur district, Himachal Pradesh
BS-212	Poonam Kumari and M.S. Thakur	A Survey of Diversity and Abundance of Insect Pollinators of <i>Punica granatum</i> (Linnaeus) in Darlaghat, Solan district of Himachal Pradesh
BS-213	Shilpa	Role of Plant Growth Promoting Rhizobacteria (PGPR) in Enhancing Agricultural Sustainability
BS-214	Atul soni, Deepika Kaushal, Sunil kumar, Manish Kumar	<i>Centella asiatica</i> leaves used for synthesis of Copper oxide nanoparticles by using Co-precipitation method
BS-215	Alka Rani, Felix Bast and Vikas Jaitak	Therapeutical and Nutraceutical applications of <i>Gracilaria</i> : The fascinating seaweed