



## Dr. Mohan L Verma

(Msc, PhD)

Professor & Head,

Department of Applied Physics

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**Research-Gate link :** [https://www.researchgate.net/profile/Mohan\\_L\\_Verma](https://www.researchgate.net/profile/Mohan_L_Verma)

**Google-Scholar:** [https://scholar.google.co.in/citations?hl=en&user=AhgFmEAAAAJ&view\\_op=list\\_works&sortby=pubdate](https://scholar.google.co.in/citations?hl=en&user=AhgFmEAAAAJ&view_op=list_works&sortby=pubdate)

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### About myself

Presently working as Professor and Head of Department of Applied Physics at Shri Shankaracharya Group of Institutions (Shri Shankaracharya Technical Campus), Bhilai, Chhattisgarh. Well known physics/material science teacher with leading capabilities. Actively involved in interdisciplinary research activities (both experimental and theoretical) on ionic, electronic, nano-structured both crystalline and noncrystalline/polymeric materials (designing and their device applications). Author of more than 65+ publications. Organized and participated in several conferences in the area of Materials Physics and Nanoscale Science.

**My strength :** Dynamic personality, Always ready to learn and adopt new ideas and techniques, ability of working in team as a skilled coordinator, punctual and good in time management, health conscious.

**My weakness :** Engage myself in parallel works and sometimes get tensed.

## Academic Qualifications

2000 : **Ph.D. (Solid State Ionics Physics)\*** [Pt.R.S.S.U, Raipur (C.G.)]

1995 : M.Sc. Physics [Pt. R. S. S. U, Raipur (CG)]

1993 : B.Sc.(PCM) [Pt.R.S.S.U, Raipur (CG)]

**\* Title of Ph. D. Thesis** : *“Transport property study and battery fabrication of some silver ion conducting fast ion conductors”*, under the guidance of **Dr Rakesh C Agrawal**, Emeritus Prof. School of Studies in Physics & Astrophysics, Pt. Ravishankar Shukla University Raipur (Chhattisgarh) INDIA.

## Professional Recognition, Awards & Fellowships Received

- Award of Project Fellowship by MPCOST (vide sanction No. p86/92 dt. 16/12/94).
- Award of Research Fellowship by Pt. Ravishankar Shukla University, Raipur (C.G.) (No. 1457/Fin./Sch/1998 dt. 26/09/98).
- Young Scientist award by MPCOST Bhopal in a conference on the National Science Day, 28 Feb. 1998 organised at Pt. Ravishankar Shukla University Raipur.

## Teaching Experience

Started teaching career from 14/08/1999 as a lecturer of Engineering Physics in the Department of Physics, Raipur Institute of Technology, Raipur (Chhattisgarh). Later on joined as lecturer in Shri Shankaracharya Group of Institutions on 23 Feb 2000. Presently working as a full time Professor of Physics in the same institute . Since ~ 17 years continuously teaching [Engineering Physics](#) and [Electrical Engineering Materials](#) to graduate students as well as giving lectures in different topics of Solid State Physics to post graduate students of nearby colleges. During [PhD course](#) work of research scholars of the present institution, given [special lectures on research writing](#). In this tenure Applied Physics lab and Basic Electronics laboratory for BE students were established under my supervision.

## **Details of Employment (Total Teaching Experience : 18y 10m 14d)**

| S. No. | Post                                       | Name of Institution  | Duration                         | Scale             |
|--------|--|--|----------------------------------|-------------------|
| 1.     | Lecturer<br>(6 m 8 d)                      | Raipur Institute of Technology<br>Raipur (Chhattisgarh)                                      | From 14/08/1999 to<br>22/02/2000 | 2200-75-4000/-    |
| 2.     | Lecturer<br>(3y 5m 9d)                     | Shri Shankaracharya College of<br>Engineering & Technology<br>Junwani, Bhilai (Chhattisgarh) | From 23/02/2000 to<br>31/07/2003 | 8000-275-12000/-  |
| 3.     | Lecturer (Sr.<br>Grade)<br>(1y 7m)         | Shri Shankaracharya College of<br>Engineering & Technology<br>Junwani, Bhilai (Chhattisgarh) | From 01/08/2003 to<br>28/02/2005 | 10000-325-15200/- |
| 4.     | Reader<br>(5 yrs)                          | Shri Shankaracharya College of<br>Engineering & Technology<br>Junwani, Bhilai (Chhattisgarh) | 01/03/2005 to<br>28/02/2010      | 12000-420-18300/- |
| 5.     | Sr. Associate<br>Professor<br>(2y 11m 27d) | Shri Shankaracharya Group of<br>Institutions Junwani, Bhilai<br>(Chhattisgarh)               | 01/03/2010 to<br>27/02/2013      | 34400-900-65900/- |
| 6.     | Professor<br>(5y 4m)                       | FET-SSGI, Shri Shankaracharya<br>Technical Campus -Junwani<br>Bhilai (Chhattisgarh)          | 28/02/2013 to Till<br>date       | 37400-900-67000/- |

### **My Teaching Philosophy**

My personal teaching philosophy based on four pillars :

1. Teaching is always a two way process. When I teach, I learn a lot.
2. The world is symmetric in nature, so if there is any problem there will always be a solution as counter-part.
3. Its my moral duty to treat all students with absolute equality regardless of age, gender, nationality, intellectual ability or personal attractiveness.
4. It is my business to try to understand the student's point of view, before attempting to give them my own. This means that when I do teach I can choose a

conceptual path that leads from the students current understanding to a broader or more conventional one.

**Teaching Plan :** Now a days the teaching plan is based on course outcome(CO) and program outcomes(PO). My teaching plan for the year also follows the COs and POs of my subjects i.e. physics and material science. But I prefer to be flexible and realize that lessons might not always go in the direction I plan because the students get interested or excited about something.

**Teaching tools/methodology :** Actually lecture on my subjects include *theoretical concepts, mathematical derivations, numerical problems and experimental demonstrations*. The general practice I use during my classes of physics and material science is to check the basic knowledge of students of any fresh topic/chapter/unit before starting. For which I give 3-4 very basic questions in the level of their previous classes and ask them to write whatever they know about, within 10-15 minuets with the friends of same bench. Then the topic is opened for discussion. Thus, my first lecture is devoted to create a pleasant environment to learn that chapter interestingly by giving the scientific and historical background of the topic/chapter with suitable examples. This gives me complete attention of students and the level I have to reach to teach that topic to my students.

I never believe on spoon feeding to my students as well as giving simple oral talk only. I completely engage my students with me during the complete lecture taking the help of students in mathematical derivations. When my students do the mathematics I roam in class to check the correctness and help them if needed. I never left the numerical problems for the end of the unit. During the coverage of any topic, I solve related numerical problems simultaneously. This help the students to understand the concept in deep. Similarly the experimental demonstrations (if needed and available in the lab) is performed during the completion of the topic concerned.

There are many teaching tools but I found the talk duster as a most effective tool in class room teaching. Sometimes I also use power point presentation on any specific topics.

**Assessments :** Through out the year I do both informal and formal assessment. During the units and for most of the lessons I use informal assessment. Roaming in the

classroom during numerical problem solving and mathematical derivations is also my way of assessment. In my observations I write down notes (if needed) to remember things and use that information to help me plan for in the future. At the end of the units and sometimes for big lessons, I use formal assessments. While I take tests, that is not the only form of formal assessment I will use. I plan to have papers, projects, presentations, and other creative ways to fit my students' learning needs.

**Blended learning** : Today, our students are always on the go. Stick them in one place in front of one thing for too long and they get bored. They need entertainment, stimulation, and variety. This is a good time to mix your classroom up into a digital playground. Blended learning isn't just for students. It's a way for teachers to connect to both their learners and the digital world they inhabit. Pupil and instructor grow together, as it should be. The key to learning in any kind of setting is that the learning must be *useful*. Digital students are very perceptive, and also pragmatic. They are always going to be asking the question, "[Why do I need to learn this?](#)" I also use *blended learning* technique. I use simplest technique. There are many useful course contents are available in digital form as ebooks and video lectures. For any specific topic I instruct my students to view a short and purposeful video about the concerned topic and identify the problem. I give some time to make the report or presentations individually and /or in group and give an assignment to present in form of Ppt presentation, poster or model presentation. Apart from this, some problem based learning is also in practice during lab hours.

### **Administrative Skill**

- Well known for good administrative work as Prof Incharge 1<sup>st</sup> year and Head of Department since 2000.
- Organized various national/international events as coordinator.
- Since 2011 also working as Ph.D program coordinator (Chhattisgarh Swami Vivekanand Technical University,Bhilai) for the scholars pursuing research work in various Engineering, Science, Pharmacy & Management courses in this institute.
- Worked/working as one of the coordinators for the preparation of NAAC and NBA accreditation related various activities.

- Chairman/Member of proctorial board and anti-ragging committee of the institute in various sessions.

### **Professional Activities**

1. Reviewer of various international Journal viz : International Journal of Ionics, International Journal of Material Science and Engineering-B, International Journal of Journal of Alloys and Compounds International Journal of material research, Various international Journals of IOP viz. Journal of Physics D, Nanotechnology etc.
2. Delivered a series of lectures on “**Piezoelectric materials and Optoelectronic devices**” from 13<sup>th</sup> – 15<sup>th</sup> November 2006 at Govt. V. Y. T. P. G. Autonomous College, Durg(C.G.).
3. Attended the **Transit of Venus**: Training Programme for Master Resource Persons of Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand and Orissa organised from 14-15th May, 2012 at M.P. Council of Science & Technology, Vigyan Bhawan, Nehru Nagar, Bhopal-462003 in joint collaboration with NCSTC, DST, New Delhi, and Vigyan Prasar, Noida. Nominated from Chhattisgarh state (Chhattisgarh Council of Science and Technology), for participation in this programme.
4. Deputed by Chhattisgarh Council of Science and Technology as state level resource person to participate in the National Orientation Workshop for finalization of activity guide of National Children's Science Congress 2012-13 from 11-13 June 2012 at regional institute of education (NCERT) Mysore Karnataka . The focal theme selected by NCSTC -Department of Science and Technology (DST) was "Energy : Explore, Harness & Conserve.
5. Delivered series of lectures for MSc Physics Students at Kalyan PG College Bhilai and Govt PG college Raipur students on SIESTA based material modeling.
6. Nominated as an active member of video conferencing lectures on various subjects for weak students of different affiliated technical colleges of Chhattisgarh Swami Vivekanand Technical University Bhilai.

### **Professional Body's Membership**

1. Life member of National Society of Solid State Ionics.
2. Life member of The Society for Advancement of electrochemical Science and Technology, Karaikudi.
3. Life member of Material Research Society of India.

4. Life member of Indian Society for Technical Education(Regd. No. LM40806).
5. Life member of Indian Association of Physics Teachers (8198 L-4779).

### **Additional Skills and Expertise**

Knowledge of MS Office, DOS, windows and Linux operating systems (FEDORA and Centos), installation and use and problem troubleshooting.

working knowledge of Modeling packages

(I) **Material structure designing and visualization tools** : Avogadro, Jmol, VESTA, ATK-quantumwise-builder, Xcrysden, Molden etc.

(ii) **Structural Optimization tools** : SIESTA, Transiesta, ATK-Quantumwise

(iii) **Computation and plotting tools** : Xmgrace, MATLAB, gnuplot.

(iv) **Other modeling tools** : SIMULINK, Java based ImageJ,.

### **Research Profile**

**(a) Research work during My PhD** : During my PhD work I was assigned the title of my thesis as “Transport property study and battery fabrication of some silver ion conducting fast ion conductors”. So prime objective of my work was, the preparation and characterization studies of silver ion conducting composite electrolytes for solid state battery fabrication. I had started my work in Aug 1996, under the supervision of Dr Rakesh C Agrawal, Emeritus Prof. School of Studies in Physics & Astrophysics, Pt. Ravishankar Shukla University Raipur (Chhattisgarh) INDIA. I had prepared 2 phase composite electrolytes using 0.75AgI:0.25AgCl as first phase host in place of conventional AgI and micro/nano sized inert SiO<sub>2</sub> and ZrO<sub>2</sub> dispersoids as second phase. As in turn one order enhancement in ionic conductivity of host is observed in both electrolyte systems. For structural and thermal analysis XRD DSC were performed to proof its crystalline nature and as two phase system. In the second phase of my work solid state batteries were fabricated using above electrolytes with different compatible electrodes. Battery performance was studied in different load conditions too. Some polarization depolarization mathematical calculations were also done as additional work. Some good publications I have in this period. I have submitted my thesis on 27 Jan 2000 and awarded my degree on 05 th Aug 2000.

## **(b) Research lab Established**

- **Condensed Matter Physics Research Lab (CMPRL)** in 2001-2002 for Material Preparation and characterization studies and Solid-State Electrochemical Device Applications viz. Solid state batteries. Supercapacitor, light emitting electrochemical cell of ionic composites, nano-composites, ionic polymers and polymer nano-composite electrolyte materials.
- **Computational nanoionics Research Lab (CNIRL)** in 2012-13 for material/nano-material/nanoionic-materials modeling and simulation to study electronic, electrical, mechanical, optical and transport properties of nanoparticles, nano-tubes, nano-ribbons, semiconductors, conducting polymers, hybrid-biomolecules, OLED, LEEC applications. This is the first parallel computing lab of central India which is collaborated with the Department of Physics, Michigan Technological University (MTU), Houghton, USA.
- **Establishing a Siesta research group** in India as *siesta-india* to work together in the field of nano- material science to study properties and device applications. In this group free online training/discussions sessions will be encouraged to learn and study different material properties. The main aim of this group is to work together and learn together. Interested candidates may contact either through mail ([drmohanlv@gmail.com](mailto:drmohanlv@gmail.com)) or on my site: [www.drmlv.in/siesta-india](http://www.drmlv.in/siesta-india). M.Sc/MTech students are also welcome with some innovative ideas/problems. Various MTech, Ph D students from different Technical/Science colleges are availing the benefits of this group and lab to learn material modeling for their projects.

**(c) My Present Research Interests :** I am equally interested in Experimental as well as theoretical (mathematical and computational material modeling) research work. At present following research work is running in my lab :

### **(i) Experimental Material/NanoMaterial Science**

In the continuation of my PhD work, I am still involved in experimental research on Material Preparation and characterization studies and solid-state electrochemical device applications viz. solid state batteries. supercapacitor, light emitting electrochemical cell of ionic composites, nano-composites, ionic polymers and polymer nano-composite electrolyte materials. Three scholars have been completed their work in these materials



**Dr. Arti Verma** – *Characterization analysis of some nanocomposite electrolytes using digital image processing of SEM/TEM images.* –(Awards in 2014).

**Dr. Nirbhay Singh**- *Investigation on transport properties and material characterization of some nanomaterials for fabrication of supercapacitors* (Awards in 2015).

**Homendra Das Sahu**- Transport properties study and device applications of some polymer nanocomposite electrolyte system. (thesis submitted recently ).

Some PEO based solid electrolytes and nanocomposites were studied experimentally. For detailed structural analysis, image processing of SEM images were performed using java based ImageJ software. Supercapacitors and solid state batteries fabrications and performance studies are the prime objectives of this research. Using SIMULINK, hybrid electric vehicle (HEV) were modeled as an advanced study.

## **(ii) Theoretical Material/Nano-material Science**

- **Mathematical -Modeling** : Mathematical modeling and evaluation of transport properties of some ionic/superionic solids by using space charge depolarization method. Modeling of electrochemical devices viz. solid state batteries, super capacitors and sensors are also in progress. One of the phd thesis of my lab is based on it. Modeling of Light Emitting Electrochemical Cell is under progress.

**Dr. B. Keshav Rao** - *Modeling of transport properties of some nanoionic materials.* –(Awards in 2014). MATLAB is used for the modeling of transport properties of some superionic/ionic solids.

- **First principle studies** : Molecular structural, electronic/electrical, mechanical, optical properties analysis of various crystalline/noncrystalline nano-materials, biomaterials, ionic/super-ionic solids and electronic/ionic conducting polymers in context of solid state battery, super capacitor, organic light emitting diode(OLED), light emitting electrochemical cell (LEEC) applications. In these studies density functional based approach implemented in SIESTA, a quantum chemistry based software package is used. For detailed transport properties study NEGF based utility Transiesta is used in present lab. Following students are involved in this approach :

**Rachana Singh-** Ab-initio modeling and performance study of light emitting electro chemical cells, registered in 2013.

**Upma-** Studies on the electronic/ionic property of some polymeric biomaterials for medical applications: a density functional approach, registered in 2013.

Structural, Electronic, optical and transport properties of polymers, polymer composites and biomolecules are analysed using first principles before its use in light emitting electrochemical cells and sensors/molecular switches. Graphene structured 2D materials are used as electrodes.

Apart from the above one interactive youtube channel has been launched to help the beginners to associate in this wonderful world of material modeling based on DFT approach. This channel is accepted worldwide by MSc, MTech and PhD scholars to learn SIESTA. The link of channel is :

<https://www.youtube.com/channel/UCb40lsGtuGzECtrtFhQPlvw>

**(d) Future Research Interest/Proposal :** The computing technology is growing exponentially and changing the development activities of new materials. At present, the first principle calculation methods and programs are a powerful research tools, which enable the experimentalists to predict the structures and properties of a material or compound before its synthesis. On this theme two research proposals (based on first principle studies) are :

**Proposal 1 : Tailoring the Graphene structured materials for NanoFET/BioFET**

Bio-FETs have become one of the major technologies for detection of ions, DNA, proteins and other biomolecules. The working principle of Bio-FET is to monitor the conductance change in the gate channel, before and after the adsorption of target molecules. Due to its large sensing surface and excellent electronic properties, graphene, the principal 2D material, has attracted significant interest to use as a channel in FET sensors. Other graphene structured materials viz. stanene, ZnO nanoribbons, Transition metal dichalcogenides, have direct band gaps and excellent electronic properties, which offer gate-tunable conductance and make them attractive for FET sensor applications.

The aim of this proposal is to tailor 2D materials and investigate sensing performance of nanoFET/ bioFET under various physical conditions, structural geometry, layer of material and thickness/length of sensing 2D materials with and without doping/interaction of impurities/ biomolecules on the sensing surface. The work is planned as

**Designing, structural and stability analysis of 2D sensing surface and electrodes.**

**Mechanical strength, electronic and optical properties study with different physical conditions.**

**Designing of nanoFET/BioFETs and their I-V characteristics analysis with and without doping/interaction of impurities/ biomolecules.**

Quantum transport method provides detailed and accurate information about the transport properties in the nanoscale. Therefore, the interaction of biomolecule with the proposed 2D materials used for sensing will be investigated by using DFT and non-equilibrium Green's function approach implemented in SIESTA/Transiesta and/or commercial tools like Quantumwise ATK.

## **Proposal 2 : Investigations on electrodes and performance analysis of polymeric electrochemical and Photovoltaic devices**

To meet the ever-increasing energy demands and sustainability requirements, next-generation battery systems must provide superior energy densities while employing eco-friendly components. Exploiting materials from biological systems, or bio-inspiration, offers an alternative strategy to overcome the conventional energy storage mechanism through the chemical diversity, highly efficient biochemistry, sustainability, and natural abundance provided by these materials. Proposed work is categorized as :

**Designing, structural and stability analysis of new electrodes and active materials.**

**Mechanical strength analysis of polymeric systems.**

**Electronic and optical properties study with different physical conditions.**

**Designing of electrochemical and/or photovoltaic device and their I-V characteristics analysis and computation of important parameters.**

**Performance analysis of devices.**

**Work will be extended upto the modeling of bio-batteries, bio-capacitors and bio-solar cells.**

**The fabrication of devices (with best performance ) may be the next part of this proposal( I have experimental experience of fabrication of solid state batteries and supercapacitors ).**

SIESTA /Transiesta and/or commercial tools like Quantumwise ATK will be used for the different computational analysis. I am searching for a good tool for modeling of solar cell i.e. to study the photon-electron interaction.

### **(e) Collaborations with various Research Centers**

CNIRL is running well in the collaboration with following groups :

- 1 **Prof. Ravindra Pandey**, Chair, Department of Physics, Michigan Technological University, Houghton, Michigan, USA.
- 2 **Dr. Manickam Minakshi**, Faculty of Science and Engineering, School of Engineering and Information Technology, Murdoch University, Murdoch, Australia.
- 3 **Dr. Jeevan Jyoti Nakarmi**, Department of Physics, Tribhuvan University, Kathmandu, Nepal.
- 4 **Dr Ranveer**, Deptt of Physics, Dr Hari Singh Gour University Sagar (M.P)
- 5 **Dr Anjali Avadhiya**, Department of Physics, Government Nagarjuna Post Graduate (Autonomous) College of Science, Raipur (C.G.)

### **(f) Research Projects**

Thanks to management of Gangajali Education Society for providing me financial support to perform a good research work in last 15 years. Along with this, financial support is also received through following research projects :

1. A project of Chhattisgarh Council of Science & Technology, Raipur, on Structural characterization of some nanocomposite electrolyte systems using digital image processing of SEM/TEM images ([No.356/CCOST/MRP/09](#)). - completed
2. A MODROB project of AICTE-New Delhi (Rs 13 Lacks) to upgrade condensed matter physics Lab - completed

## **(g) Conference/ Seminar Organized**

1. “IWMMS 2013: International Workshop on Materials Modeling and Simulation” with the collaboration of Department of Applied Physics, Michigan Technological University, Houghton, USA, during June 24-27, **2013** at Shri Shankaracharya Group of Institutions, Junwani, Bhilai.
2. *A National Conference on recent advances in nanoscience and nanotechnology*, SSCET-Junwani, Bhilai, on 12-13 Jan **2009**.
3. A national conference on “*Horizons of electrolytic, electronic and photonic material Physics*” SSCET- Junwani, Bhilai, on 26-27 Oct. **2007**.
4. A workshop on “*Innovative Physics Teaching (WIPT 2006)*” on 30<sup>th</sup> December 2006 in SSCET, Junwani Bhilai. Resource person, Dr. H. C. Verma, Deptt. of Physics I.I.T., Kanpur, U.P.
5. A seminar on “*Role of Physics in Technical Education*” in the occasion of National Science Day 2005 and International Physics Year 2005 in SSCET Junwani Bhilai, 19 April **2005**.

## **(h) Research Students**

### **Ph.D. awarded**

1. **Dr. Arti Verma** – *Characterization analysis of some nanocomposite electrolytes using digital image processing of SEM/TEM images.* –(**Awarded in 2014, Experimental**)
2. **Dr. B. Keshav Rao** - *Modeling of transport properties of some nanoionic materials.* – (**Awarded-2014, theoretical Mathematical/DFT modeling**)
3. **Dr. Nirbhay Singh**- *Investigation on transport properties and material characterization of some nanomaterials for fabrication of supercapacitors* (**Awarded-2015, Experimental**).

### **Pursuing PhD under my supervision**

4. **Homendra Das Sahu**- *Transport properties study and device applications of some polymer nanocomposite electrolyte system*, registered in 2013. (**Experimental**)
5. **Rachana Singh**- *Ab-initio modeling and performance study of light emitting electro chemical cells*, registered in 2013. (**Theoretical DFT based**)
6. **Upma**- *Studies on the electronic/ionic property of some polymeric biomaterials for medical applications: a density functional approach*, registered in 2013. (**Theoretical DFT based**)

**7. Duga Verma-** Studies on the optical properties of rare earth doped strontium silicate nanophosphors, registered in 2013 (**both Experimental and Theoretical DFT based**) (as co-supervisor)

**8. Ajay Kumar Verma-** Optimization of lamination parameters of a composite plate subjected to thermo-mechanical loading, registered in 2013 (**Experimental**).

(as co-supervisor)

The research work is going on under the affiliation of Chhattisgarh Swami Vivekanand Technical University (CSVTU), Bhilai.

**M.Phil Students** : 20 Students of different Universities are guided for project work.\_

### **2009**

- 1. Prashant Ku Chirwatkar (Reg No. 603043080579)**, *Study of chemical and physical properties of zinc oxide surfaces*, Vinayaka Mission University -Salem (Tamilnadu) July 2009.
- 2. Smt. Abha Pandey (Reg No. 603043080386)**, *Survey of Preparation, Characterization and Application of Metal Oxide Semiconductors*, Vinayak Mission University -Salem (Tamilnadu), July 2009.
- 3. Bishnu Das Joshi (Reg No. 603043080580)**, *Preparation methods, properties of polyaniline blends and composites with organic polymers: Analytical Study*, Vinayak Mission University -Salem (Tamilnadu), July 2009.
- 4. Kailash Kumar Borker (Reg No. 603043080339)**, *Analytical study of porous metals with directional pores*, Vinayak Mission University -Salem (Tamilnadu), July 2009.
- 5. S. Rudra Murty (Reg No. 603043080206)**, *Anomalous thermodynamic properties using lattice dynamics and inelastic neutron scattering mathematical modelling*, Vinayak Mission University -Salem (Tamilnadu), July 2009.
- 6. Smt Pratibha Chhaya Lal (Reg No. 603043080293)**, *Study of the influence of interfaces on the behaviour of thin polymer film*, Vinayak Mission University -Salem (Tamilnadu), July 2009.

7. **Smt. Usha Sharaff (Reg No. C8CG001M1170228)**, *Microbial fuel cell- A best alternative to power future*, Vinayak Mission University -Salem (Tamilnadu), July 2009.

**2008**

8. **Asit Kumar Biswas (Reg No.C8CC001M1170227)**, *Carbon nanotube technology: A wondrous world*, Vinayak Mission University -Salem (Tamilnadu), July 2008.

9. **Nandkishore Sahu (Reg No. 603041080138)**, *Analytical study of nanocomposite electrolytes for recent electrochemical devices*, Vinayak Mission University -Salem (Tamilnadu) July 2008.

10. **Gracy Chourasiya (Reg No. 603041080140)**, *Studies in batteries for electric road vehicles*, Vinayak Mission University -Salem (Tamilnadu) July 2008.

11. **Anju Kunjwani (Reg No. 603041080139)**, *Polymer nanocomposite: A survey on preparation and high temperature application*, Vinayak Mission University -Salem (Tamilnadu), July 2008.

12. **Sanjay Kumar Chandrakar (Reg No. 603043070476/A7MP008M1170797)**, *Basic Research needs of Electrical Energy Storage for Future World: An Analytical Survey*, Vinayak Mission University -Salem (Tamilnadu), July 2008.

13. **Indrani Bose (Reg No. A7CG001M1170687)**, *Modeling of Transport Properties of Nanoporous Electrodes for Electrochemichal devices*, Vinayak Mission University -Salem (Tamilnadu), July 2008.

14. **Premendra Kumar Upadhyay (Reg No. A7CG001M1170090)**, *Survey on Supercapacitors Technology for the future aspects*, Vinayak Mission University -Salem (Tamilnadu), July 2008.

15. **Hemant Kr. Sharma (Reg No. A7CG001M1170007)**, *Study on Aspects and Development of Nanoelectonics*, Vinayak Mission University -Salem (Tamilnadu), July 2008.

## 2007

16. **Smt. Reeta Dwivedi (Reg No. 06DCCP2493)**, *Micro Controller Based Devices Switching System Using Password through Remote*, Periyar University SALEM (Tamilnadu), July 2007.
17. **Mrs. Neelam Shukla (Reg No. 06DCCP2494)**, *Modeling of Space Dielectric Property of Nanocomposite*, Periyar University -SALEM, July 2007.
18. **Nirbhay Kumar Singh (Reg No. 06 DCC P 2495)**, *Study of X-Rays Binary Stars*, Periyar University SALEM (Tamilnadu), 2006-2007.
19. **Seema Ku. Saraf (Reg No. 06DCCP2496)**, *Study of Trap- Modulated and Drift Mobility of  $Ag^+$  in a Nanocomposite Electrolyte by Space Charge Depolarization*, Periyar University, July-2007.
20. **Abha Mishra (Reg No. OCDCCP 2485)**, *Impulsive Excitation of Mechanoluminescence and Thermally Stimulated Luminescence in Gamma irradiated Er doped  $CaF_2$  Crystals*, Periyar University, April-2007.

[Mentoring many M Sc, M Tech/ME students of various Science and technical institutions for their project work based on SIESTA .](#)

### **(i) List of Publications**

#### **(a) In peer reviewed International/National Journals**

## 2017

1. **Mohan L Verma, B Keshav Rao**

[Ab initio study of ionic nature of 0.75 AgI: 0.25 AgCl](#)

Solid State Ionics, 2017, 310, pp.56-61, **Impact Factor: 2.354.**

2. Upma, **Mohan L. Verma**, Durga Verma

[First principle studies on electronic structure and charge density of potato starch](#)

Ionics, 2017, 10, pp. 2881-2886, **Impact Factor: 2.062.**



3. B Keshav Rao, **Mohan L Verma**  
[First principle study of PEO-AgI polymer systems](#)  
Chemical Physics Letters, 2017, 679, pp. 176-180, **Impact Factor: 1.815**
4. B Keshav Rao, **Mohan L Verma**  
[Modeling of space charge dielectric constant](#)  
Ionics, 2017, 23(6), pp. 1563-1567, **Impact Factor: 2.062.**
5. **Mohan L Verma**, Homendra D Sahu  
[Study on ionic conductivity and dielectric properties of PEO-based solid nanocomposite polymer electrolytes](#)  
Ionics, 23(9), pp 2339–2350, **Impact Factor: 2.062.**
6. **Mohan L Verma**, B Keshav Rao, Rachna Singh, Durga Banchor, Homendra D Sahu  
[Ab initio study of mechanical strength of solid polymer electrolyte \(PEO\) 5LiClO<sub>4</sub>](#)  
Ionics, 23(10), pp 2715–2720, **Impact Factor: 2.062.**
7. Rachna Singh, B Keshav Rao, **Mohan L Verma**  
[Structural, electronic and transport properties of X<sub>3</sub>SnC \(X= Cr/Mn/Cu\) electrodes—first principle approach](#)  
Ionics, 2017, pp 1–8, <https://doi.org/10.1007/s11581-017-2407-0> **Impact Factor: 2.062.**

## 2016

8. B Keshav Rao, **Mohan L Verma**  
[Modeling of ionic charge density](#)  
Chemical Physics, 2016, 478, pp. 87-90, **Impact Factor: 1.767.**
9. B Keshav Rao, **Mohan L Verma**  
[First principle study of 0.75 AgI: 0.25 AgCl: A density functional approach](#)  
Chemical Physics Letters, 2016, 661, pp. 157-160, **Impact Factor: 1.815.**
10. Rachna Singh **Mohan L. Verma**  
[Electron Transport in Zigzag Silicon and Silicon mono-oxide Nanoribbons : Ab initio study](#)

Research Journal of Physical Sciences, 2016, 4(5), pp. 1-7.

**2015**

11. Nirbhay K. Singh **Mohan L. Verma**, Manickam Minakshi Sundaram  
[PEO nanocomposite polymer electrolyte for solid state symmetric capacitors](#)  
Bulletin of Materials Science, 2015, 38(5), pp. 1577–1588, **Impact Factor 1.02.**
12. **Mohan L. Verma** and Homendra D. Sahu  
[Ionic conductivity and dielectric behavior of PEO-based silver ion conducting nanocomposite polymer electrolytes](#)  
Ionics, 21(12), 29 July 2015, pp 3223–3231, **Impact Factor: 2.062.**
13. Nirbhay K. Singh, **Mohan L. Verma** and Taide Ajay  
[Capacitor with PEO/Activated Carbon based Electrode and Nanocomposite Polymer as Electrolyte](#)  
Applied Science and Advanced Materials International , 2015, 1 (4-5), pp. 118 – 121.
14. Keshav Rao and **Mohan L. Verma (Review Article)**  
[Ionic mobility of \(0.9\)\[0.75 AgI:0.25AgCl\]:0.1SiO<sub>2</sub> in space charge depolarization](#)  
Ionics, 2015, 21(3), pp.611-616, **Impact Factor: 2.062.**
15. Amar Bahadur, **Mohan L. Verma** and Madhukar Mishra  
[First principle study of structural, electronic and magnetic properties of silicon doped zigzag boron nitride nanoribbon,](#)  
The European Physical Journal B, 2015, 88(4), pp. 79,  
<https://doi.org/10.1140/epjb/e2015-50847-5> **Impact Factor: 1.461.**
16. Rajendra Prasad Gautam , **Mohan Lal Verma**, Jeevan Jyoti Nakarmi and Shiba Subedi  
[Theoretical study on Structural and Electronics Properties of Boron and Boron Nitride Nanodics: A Density Functional Approach](#)  
International Journal of Computer & Mathematical Sciences, 2015, ISSN : 2347 – 8527, Volume 4, Special Issue, September 2015, DOI : 10.13140/RG.2.1.2227.5289.
17. Aarti Choudhary, Youman Kumar Sahu, Anjali Oudhia, Mohan L Verma  
[Shape Dependent Structural and Electronic Properties of ZnO Nanostructures](#)  
Advanced Science Letters, 2015, 21(9), pp.2677-2680,

DOI: <https://doi.org/10.1166/asl.2015.6362>

## 2014

18. **Mohan L. Verma**, Manickam Minakshi Sundaram and Nirbhay K. Singh

[Structural and electrochemical properties of nanocomposite polymer electrolyte for electrochemical devices](#)

Industrial & Engineering Chemistry Research, 2014, 53(39), pp-14993-15001 5,  
DOI: 10.1021/ie502615w, Impact Factor : 2.843.

19. **Mohan L. Verma**, Manickam Minakshi Sundaram and Nirbhay K. Singh

[Synthesis and characterization of solid polymer electrolyte based on activated carbon for solid state capacitor](#)

*Electrochimica Acta*, 2014, 137: 497–503,

DOI:<https://doi.org/10.1016/j.electacta.2014.06.039> , Impact Factor : 4.798.

20. **Mohan L. Verma** and B. Keshav Rao

[Modeling of ionic diffusion by space charge depolarization](#)

*Ionics*, 2014, 20(5) pp 697-701, DOI:10.1007/s11581-013-1015-x, Impact Factor :  
2.062.

## 2013

21. **Mohan L. Verma** and B. Keshav Rao

A density functional approach for the conductivity

CSVTU research journal, 2013, 6, pp - 13-16 2013. ISSN:0975-8725.

22. **Mohan L. Verma** and B. Keshav Rao

Modeling of ionic charge current density

*CSVTU research journal*, 2013, 6: 17-20 2013. ISSN:0975-8725.

## 2012

23. **Mohan L. Verma** and Nirbhay K. Singh

[AC impedance spectroscopic of nano size Al<sub>2</sub>O<sub>3</sub> Filler in PEO: AgI polymer electrolyte](#)

*Material Science Research India*, 2012, 9(1), pp-139-146, ISSN Print: 0973-3469,  
Online: 2394-0565.

24. **Mohan L. Verma** and Nirbhay K. Singh

AC Impedance Analysis on PEO:AgI Polymer Electrolyte for Capacitor Application

CSVTU Research Journal, 2012, 5, pp- 22-26, ISSN:0975-8725.

25. **Mohan L. Verma** and Nirbhay K. Singh

[Ultrabattery, fuel cell and supercapacitorbased HEV a comparative study of performance](#)

International Journal of Theoretical and Applied Physics, 2012, 2, pp-113-124, ISSN: 2250-0634.

26. **Mohan L. Verma** and Arti Verma

[Investigation on solid polymer electrolyte \(SPE\) membrane of composition \[\(1-x\) PEO: x AgCl\] prepared by hot press technique](#)

MaterialScience Research India, 2012, 9(2), pp- 227-232 ISSN Print: 0973-3469, Online: 2394-0565.

## 2011

27. **Mohan L. Verma** and B. Keshav Rao

[Modeling of Ag<sup>+</sup> mobility in AgI by space charge depolarization process](#)

Ionics, 2011, 17(4), pp-323-329, DOI : 10.1007/s11581-010-0513-3, Impact Factor 2.062. .

28. **Mohan L. Verma** and Arti Verma

[Structural and morphological characterization of Ag<sup>+</sup>ion conducting nanocomposite polymer electrolyte membrane \(1-x\)\[70 PEO: 30 Ag<sub>2</sub>SO<sub>4</sub>\]: x Fe<sub>2</sub>O<sub>3</sub> by hot press technique](#)

International Journal of Pure and Applied Physics, 2011, 7(1), pp- 7-12, 2011, ISSN 0973-1776.

29. **Mohan L. Verma** and Arti Verma

[Study of membrane morphology of SEM image of polymer nanocomposite membrane by digital Image processing](#)

International Journal of Engg. Science and Technology, 2011, 1, pp- 1332-1336, ISSN: 2248 –9622.

30. **Mohan L. Verma**, Arti Verma and R.C. Agrawal

Characterization Study of Hot-Press-Synthesized Electro Active Polymeric Membranes by Image Processing

International Journal of Nanotechnology and Applications, 2011, 5(3), pp-161-171  
ISSN : 0974-3081.

31. **Mohan L Verma** and Arti Verma

[Ionic transport properties and characterization studies on Ag<sup>+</sup> ion conducting polymeric nanocomposite electrolyte membrane \(1-x\)\[70PEO: 30AgCl\]: xTiO<sub>2</sub> prepared by hot press technique.](#)

Advances in Polymer Science and Technology: An International Journal, 2011, 1(1), pp-10-13, ISSN : 2277 – 7164.

## 2006

32. **Mohan L. Verma**, R.C. Agrawal and Mimi Mukherjee

[Space charge depolarization of wurtzite or zinc blend structured silver iodide: modeling of preliminary studies](#)

Radiation effects & Defects in solids, 2006, 161(4), pp-225-233, DOI : <https://doi.org/10.1080/10420150600673549>

## 2000

33. R. C. Agrawal, **Mohan L. Verma**, R. K. Gupta and S Thaker

[Characterization of basic transport properties in a new fast Ag<sup>+</sup> ion conducting composite electrolyte system:\(1- x\)\[0.75 AgI: 0.25 AgCl\]: xZrO<sub>2</sub>](#)

Solid State Ionics, 2000, 136-137, pp 473-478, doi:[10.1016/S0167-2738\(00\)00461-6](https://doi.org/10.1016/S0167-2738(00)00461-6)  
Impact Factor: **2.354**.

## 1999

34. R. C. Agrawal, **Mohan L. Verma** and R. K. Gupta

[Studies on persistent-polarization/memory-type effect in Ag<sup>+</sup> ion conducting quenched \[0.75 AgI: 0.25 AgCl\] mixed-system/solid-solution](#)

Indian, J. Pure and Appl. Phy, 1999, 37(04), pp-334-337, Impact Factor: **0.77**.

35. R. C. Agrawal, R.K.Gupta, **Mohan L. Verma** and A. R. Sharma

[Polarization/self-depolarization studies on Ag<sup>+</sup> ion conducting quenched \[0.75 AgI: 0.25 AgCl\] mixed system/solid solution](#)

Indian, J. Pure and Appl. Phy, 1999, 37(04), pp-235-238, Impact Factor: **0.77**.

**1998**

36. R. C. Agrawal, **Mohan L. Verma** and R. K. Gupta

[A study of ionic transport properties on a new Ag<sup>+</sup>-ion-conducting composite electrolyte system:\(1-x\)\[0.75 AgI: 0.25 AgCl\]: xSiO<sub>2</sub>](#)

Journal of Physics D: Applied Physics, 1998, 31(20), pp-2854-2860, Impact Factor: **2.588**, doi : [https://doi.org/ 10.1088/0022-3727/31/20/020](https://doi.org/10.1088/0022-3727/31/20/020).

37. R. C. Agrawal, R. K. Gupta and **Mohan L. Verma**

[Studies of polarization/self-depolarization and electret-type effect in AgI](#)

ionics, 1998, 4(1-2), pp 33-41, 1998, doi:10.1007/BF02375777, Impact Factor : **2.062**.

**Summary : Total International : 35, Total National : 02**

**(b) Book chapters / special issues of solid state ionics**

**2010**

38. **Mohan L. Verma** and B.Keshav Rao

[Modeling of space charge ionic conduction in 2 phase nano composite electrolytes](#)

in *Solid State Ionics : Fundamental Researches and Technological Applications*, eds B.V.R. Chowdari et al. Wuhan : Wuhan University of Technology Press, pp-423-430, 2010.

39. **Mohan L. Verma**, B. Keshav Rao and Homendra Sahu

[Seeking the possibility of quantum transport in ionic/superionic solids](#)

in *Solid State Ionics : Fundamental Researches and Technological Applications*, eds B.V.R. Chowdari et al. Wuhan : Wuhan University of Technology Press, pp- 431-438, 2010.

40. **Mohan L. Verma**, Homendra Sahu and Arti Verma

[Studies on correlation between dielectric properties and ionic conductivity of Fe<sub>2</sub>O<sub>3</sub> dispersed PEO based nanocomposite electrolyte](#)

in *Solid State Ionics : Fundamental Researches and Technological Applications*, eds B.V.R.Chowdari et al. Wuhan : Wuhan University of Technology Press, pp-888-895, 2010.

41. **Mohan L. Verma**, Nirbhay K. Singh

[Novel model of hybrid electric vehicle based on solar energy induced ultrabattery](#)

in *Solid State Ionics : Fundamental Researches and Technological Applications*, eds B.V.R.Chowdari et al. Wuhan : Wuhan University of Technology Press, pp-1139-1145, 2010.

## 2008

42. **Mohan L. Verma** and B.Keshav Rao

[Modeling of Space Charge Density in Some Nanocomposite Solid Electrolyte](#)

in *Solid State Ionics : New materials for pollution free energy devices* eds B.V.R. Chowdari et al. World Scientific, Singapore pp-531-536 2008.

43. **Mohan L. Verma**, B. Keshav Rao, Homendra Sahu and Nirbhay K. Singh

[Modeling and Determination of Space Charge Dielectric Constant of Nanocomposite Electrolyte 0.9\[0.75 AgI : 0.25 AgCl\]:SiO<sub>2</sub>](#)

in *Solid State Ionics : New materials for pollution free energy devices* eds B.V.R.Chowdari et al. World Scientific, Singapore, pp- 525-530, 2008.

44. **Mohan L. Verma**, B. Keshav Rao, Arti Verma and Mimi Mukherjee

[Structural Characterization of Ionic Materials Applying Digital Image Processing of SEM/TEM Image : A Novel Approach](#)

in *Solid State Ionics : New materials for pollution free energy devices* eds B.V.R.Chowdari et al. World Scientific, Singapore, pp-417-421, 2008.

45. **Mohan L. Verma**, Nirbhay K. Singh and Homendra Sahu

[Supercapacitors for hybridelectric vehicles: A survey and modeling of new control structure](#)

in *Solid State Ionics : New materials for pollution free energy devices* eds B. V. R. Chowdari et al. World Scientific, Singapore , pp-831-836, 2008.

## 2001

46. R. C. Agrawal, **Mohan L. Verma** and R. K. Gupta

[Thermoelectric power and battery discharge characteristic studies of a new silver ion conducting composite electrolyte \(1-x\) \[0.75AgI:0.25AgCl\]:xZrO<sub>2</sub>](#)

in *Ion Conducting Materials : Theory & Applications*, eds- A. R. Kulkarni and P Gopalan, Narosa Publishing House, New Delhi, ISBN: 978-81-7319-401-6, pp. 220, 2001.

## 1998

47. R. C. Agrawal, **Mohan L. Verma**, R. K. Gupta and S. Thaker

Thermoelectric power and battery discharge characteristic studies of a new silver ion conducting composite electrolyte

in *Solid State Ionics - Science and Technology* (eds) B. V. R. Chowdary et al. World Scientific, Singapore 465 1998. [ISBN No : 9810237634, 9789810237639 ].

48. R C. Agrawal, **Mohan L. Verma**, R. K. Gupta, R. Kumar, M. L. Verma and S. K. Pandey.

Estimation of mobile ion concentration in some silver ion conducting solid electrolyte systems by dc polarization/depolarization studies

in *Solid State Ionics – Science and Technology*, (eds) B. V. R. Chowdary et al. World Scientific, Singapore 127 1998. [ISBN No : 9810237634, 9789810237639].

**Summary : Total International : 10, Total National : 01**

## (c) in proceedings of international/national conferences

### 2015

49. Anjali Oudhia, Youman Kumar Sahu, Aarti Chaudhary and **Mohan L Verma**

A FIRST PRINCIPLE STUDY OF ELECTRONIC STRUCTURE OF ZnO NANORIBBON

International Journal of Advanced Engineering Research and Studies/IV/II/Jan.-March,2015/294-295.

50. Upma, **Mohan L Verma** and Rachna Singh

Ab initio studies on electronic structure and charge density of potato starch

International Journal of Advanced Engineering Research and Studies /IV/II/Jan.-March,2015/294-295.

51. Durga Verma, R.P. Patel, **Mohan L Verma**

PREPARATION OF Eu-ACTIVATED Sr<sub>2</sub>SiO<sub>4</sub> PHOSPHOR BY A COMBUSTION METHOD AND ITS OPTICAL PROPERTIES



## 2011

52. **Mohan L. Verma**, B. Keshav Rao and Homendra Sahu

[Modeling of a transport properties of a nano-composite material](#)

in the *proceedings of National Conference on recent trends in physics of solids*, Excellent publishing house, eds. K.V.R. Murthy et al. pp. 59-63 2011.

## 2008

53. **Mohan L. Verma** and B. Keshav Rao

[Modeling of Space Charge Density in Nanocomposite Solid Electrolyte 0.9AgCl:0.1SiO<sub>2</sub>](#)

in the *proceeding of International conference on interdisciplinary approach in physical sciences: Growing trends and recent advances*, Guru Ghansidas University Bilaspur (Chhattisgarh) India 2008.

54. **Mohan L. Verma**, Mimi Mukherjee and Arti Verma

[Structural characterization of nano- crystalline CdS by digital image processing](#)

in the *proceeding of International conference of Interdisciplinary approach in physical sciences : growing trends and recent advances*, Guru Ghansidas University Bilaspur (Chhattisgarh) India 2008.

## 2007

55. **Mohan L. Verma**, K. Deshmukh and Anil Choubey

[Modeling and Determination of drift mobility of Ag<sup>+</sup> in 0.75 AgI:0.25AgCl](#)

in the *proceeding of National Conference on Physics of Nano Structured Functional Materials*, Bhilai Institute of Technology-Durg, pp- 72-76 2007.

56. **Mohan L. Verma**, B. K. Rao and Mimi Mukherjee

[Modeling and evaluation of Ag<sup>+</sup> diffusion in nanocomposite electrolyte 0.9AgI:0.1SiO<sub>2</sub>](#)

in the *proceedings of National Conference on Physics of Nano Structured Functional Materials*, Bhilai Institute of Technology-Durg, pp -52-56 2007.

57. Mimi Mukherjee, **Mohan L. Verma**, S. Bhushan and Purna Bose

Electro-optical studies of chemically deposited Lanthanum/Neodymium doped (Cd-Pb)S films

in the *proceedings of National Conference on Physics of Nano Structured Functional Materials*, Bhilai Institute of Technology-Durg, pp- 78-82, 2007.

58. Mimi Mukherjee, **Mohan L. Verma**, Swagota Sarkar and S. Bhushan

Photoconductivity and nanoparticle studies of some chemically deposited CdS & (Cd-Pb)S films

in *Advances in Electronic Materials & Devices* [AEMD – 2006], Edts. P.K. Bajpai et al., Anamaya Publications, New Delhi (2007) ISBN No. 81-88342-91-2.

59. **Mohan L. Verma**, Mimi Mukherjee, B.K. RaO and O.P. Verma

A preliminary modeling of ionic drift mobility of a nanocomposite 0.9 AgI:SiO<sub>2</sub>

in *Advances in Electronic Materials & Devices* [AEMD – 2006], Edts. P.K. Bajpai et al., Anamaya Publications, New Delhi (2007) ISBN No. 81-88342-91-2.

## 2006

60. **Mohan L. Verma**, Mimi Mukherjee, B. K. RaO and Lalit K. Bhaiya

A preliminary modeling of space charge dielectric constant of nanocomposite [0.9AgI :0.1 SiO<sub>2</sub>]

in *proceeding of National conference in recent trends in material science*(RTMS06), North Maharashtra University, Jalgaon (MS) 2006.

## 2002

61. R.C. Agrawal, Chetan K. Sinha and **Mohan L. Verma**

Discharge characteristic study on solid-state battery using composite electrolyte system 0.8 [0.25AgI: 0.25AgCl]:0.2Fe<sub>2</sub>O<sub>3</sub>

in *Proc. of the 7<sup>th</sup> Int. symposium in Advances in Electrochemical Science and Technology*, ISAEST –VII, Chennai India 174-177 2002.

**Summary : Total International : 05, Total National : 08**

**(d) Research Papers Presented by me and my research scholars in various national/international Conferences**

## 2017

1. Rachna Singh, B.Keshav Rao, **Mohan L Verma** and Ranveer Kumar

[Structural, Electronic and Transport Properties of X<sub>3</sub>SnC \(X=Cr/Mn/Cu\) Electrodes-First Principle Approach](#)

12th National Conference on Solid State Ionics, organized by the Deptt. of Physics, BITS Pilani on 21-23 Dec. 2017 pp 57.

2. Rachna Singh, B.Keshav Rao, **Mohan L Verma**, Homendra D Sahu and Nirbhay K Singh

[First Principle Study of Interaction of PEO with LiI/NaI](#)

12th National Conference on Solid State Ionics, organized by the Deptt. of Physics, BITS Pilani on 21-23 Dec. 2017 pp 76.

3. Homendra D Sahu, **Mohan L Verma**, B.Keshav Rao and Nirbhay K Singh

[Enhancement fo Ag<sup>+</sup> Ionic Conductivity in Solid Nanocomposite Polymer Electolyte Treated with Magnetic Field](#)

12th National Conference on Solid State Ionics, organized by the Deptt. of Physics, BITS Pilani on 21-23 Dec. 2017 pp 83.

4. Rachna Singh, B. Keshav Rao and **Mohan L Verma**

[Electronic and Transport Properties of SnC Crystal and Nanoribbons - A DFT Approach](#)

National Conference On Signal Processing, Sustainable Energy Materials and Astronomy & Astrophysics (NSSEMA 2017), organized by School of Studies in Electronics & Photonics and School of Studies in Physics & Astrophysics, Pt Ravishankar Shukla University Raipur, Chhattisgarh on 28-30 March 2017.

5. **Mohan L Verma** and Homendra D Sahu

[Ionic conductivity and dielectric behavior of PEO based solid nanocomposite polymer electrolyte treated with magnetic field](#)

National Conference On Signal Processing, Sustainable Energy Materials and Astronomy & Astrophysics (NSSEMA 2017), organized by School of Studies in Electronics & Photonics and School of Studies in Physics & Astrophysics, Pt Ravishankar Shukla University Raipur, Chhattisgarh, on 28-30 March 2017.

6. B. Keshav Rao, **Mohan L Verma**, Homendra D Sahu, Nirbhay K Singh and Rachna Singh

[Ab Initio calculation of Zinc Blend Structured 0.75AgI:0.25AgCl Solid Solution](#)  
National Conference on Research challenges in Science, Technology &

Management for National development (BITCON-2017), at Bhilai Institute of Technology, Durg, Chhattisgarh, on 28-March, 2017, pp-52.

## 2016

7. Rachna Singh, B. Keshav Rao, **Mohan L Verma**, and Ranveer Kumar  
[The charge density of PEO-MI \(M=Li, Na\) polymer electrolytes: A first principle study](#)  
15th Asian Conference on Solid State Ionics at IIT, Patna, Bihar, INDIA on Nov. 27-30, 2016, pp-183.
8. Upma, **Mohan L Verma** and Durga  
[First Principle Studies on Electronic Structure and Charge Density of Potato Starch](#)  
15th Asian Conference on Solid State Ionics at IIT, Patna, Bihar, INDIA on Nov. 27-30, 2016, pp-183.
9. **Mohan L. Verma**, B.Keshav Rao, Rachna Singh, Durga and Homendra Sahu  
[Ab Initio Study of Mechanical Strength of Solid Polymer Electrolyte PEO:LiClO<sub>4</sub>](#)  
15th Asian Conference on Solid State Ionics at IIT, Patna, Bihar, INDIA on Nov. 27-30, 2016, pp-189.

## 2015

10. **Mohan L Verma** and Rachna Singh  
[Density functional theory: how useful for electrolytic systems ?](#)  
11<sup>th</sup> National Conference on Solid State Ionics (NCSSI-11), Dept. of Physics, Tezpur University, Tezpur, Assam, on 21-23, Dec. 2015.
11. **Mohan L Verma**, Rachna Singh and B. Keshav Rao  
[First principle study of PPV-PEO-LiClO<sub>4</sub> in the context of light emitting electrochemical cell](#)  
11<sup>th</sup> National Conference on Solid State Ionics (NCSSI-11), Dept. of Physics, Tezpur University, Tezpur, Assam, on 21-23, Dec. 2015.
12. Upma, **Mohan L Verma**, Rachna Singh and Ranveer Kumar  
[First principle studies on structural and electronic properties of PEO<sub>5</sub>-LiI](#)  
11<sup>th</sup> National Conference on Solid State Ionics (NCSSI-11), Dept. of Physics, Tezpur University, Tezpur, Assam, on 21-23, Dec. 2015.

13. **Mohan L Verma**, Homendra D Sahu, Nirbhay K Singh and Ranveer Kumar  
[Impedance spectroscopy study of PEO based nanocomposite polymer electrolyte processed with magnetic field](#)  
11<sup>th</sup> National Conference on Solid State Ionics (NCSSI-11), Dept. of Physics, Tezpur University, Tejpur, Assam, on 21-23, Dec. 2015.
  14. B Keshav Rao, **Mohan L Verma**, Homendra Sahu & Nirbhay K Singh  
[The First Principle Study of 0.75AgI:0.25AgCl: A Density Functional Approach](#)  
All India Conference on Sustainable Product Development, Chhatrapati Shivaji Institute of Technology, Durg, Chhattisgarh, 24-25 April, 2015.
  15. Rachna Singh and **Mohan L Verma**  
[Comparative Study of Electrolyte Materials for LEEC: A first principle approach](#)  
National Conference on Polymer Science, Shri Shankaracharya Technical Campus (SSGI), Bhilai, Chhattisgarh, 21 March, 2015.
  16. Rachna Singh, **Mohan L Verma** and Upma  
[Study of electrolyte materials for LEEC: A DFT approach](#)  
National Conference on Nanostructured Materials and Their Characterization, Bhilai Institute of Technology, Bhilai, Chhattisgarh, 20-21, Feb. 2015.
  17. Upma, **Mohan L Verma** and Rachna Singh  
[Ab Initio Studies on Electronic Structure and Charge Density of Potato Starch](#)  
National Conference on Nanostructured Materials and Their Characterization, Bhilai Institute of Technology, Bhilai, Chhattisgarh, 20-21, Feb. 2015.
- 2014**
18. B. Keshav Rao and **Mohan L Verma**  
[A Density Functional Approach: Cationic Interaction in Polymer Systems](#)  
National Conference on Nanoscience and Nanotechnology, Shri Shankaracharya Technical Campus, Bhilai, Chhattisgarh, 8 Nov. 2014.
  19. Nirbhay Singh, **Mohan L Verma** and B Keshav Rao  
[Electrical and electrochemical behavior on nano-composite polymer electrolyte \(NCPE\) membranes: \(1-x\)\(PEO70:AgI30\)\(1-x\):xTiO<sub>2</sub> for capacitor application](#)  
3<sup>rd</sup> International Conference on polymer and characterization, at Mahatma Gandhi University, Kottayam, Kerala, on 11-13 Oct., 2014.

20. **Mohan L Verma**, Rachana Singh and B Keshav Rao

[First principle study of light emitting electrochemical cell](#)

3<sup>rd</sup> International Conference on Polymer and Characterization, at Mahatma Gandhi University, Kottayam, Kerala, on 11-13 Oct., 2014.

**2012**

21. **Mohan L. Verma**, B. Keshav Rao and Upma

[The Role of Computer Experiments in Research and Development of Chhattisgarh](#)

National Conference on Role of Science & Technology for Sustainable Development of Chhattisgarh, at Shri Shankaracharya Technical campus, Bhilai, Chhattisgarh, on 25-26 Jan. 2012.

**2011**

22. **Mohan L. Verma**, B.Keshav Rao and Homendra Sahu

[Modeling of a transport property of a nano-composite material](#)

Recent Trends in Physics of Solids, Govt. V. Y. T. Post Graduate Autonomous College, Durg, Chhattisgarh, on 11-12 Oct. 2011.

**2010**

23. **Mohan L. Verma** & B. Keshav Rao

[Modeling of Space Charge Conductivity in Some Nanocomposite Solid Electrolyte](#)

New Horizons in Physics and Electronics, St. Thomas College, Bhilai, Chhattisgarh, 2010.

**2009**

24. **Mohan L. Verma** and B. Keshav Rao

[Modeling of Percolation Ionic Current in Nanocomposite Solid Electrolyte](#)

8<sup>th</sup> National Conference on Solid State Ionics: Materials for Novel Devices at Dr. H. S. Gaur University, Sagar, Madhya-Pradesh, during 7-9 Dec 2009.

**2008**

25. **Mohan L. Verma** and B.Keshav Rao

[Modeling of Space Charge Density in Some Nanocomposite Solid Electrolyte](#)

11<sup>th</sup> Asian Conference on Solid State Ionics at BU-DRDO Centre for Life Sciences, Bharathiar University, Coimbatore, India, 9-13 June, 2008.

26. **Mohan L. Verma**, B.Keshav Rao, Homendra Sahu and Nirbhay K. Singh

[Modeling and Determination of Space Charge Dielectric Constant of Nanocomposite Electrolyte 0.9\[0.75 AgI : 0.25 AgCl\] : SiO<sub>2</sub>](#)

11<sup>th</sup> Asian Conference on Solid State Ionics, at BU-DRDO Centre for Life Sciences, Bharathiar University, Coimbatore, India, 9-13 June, 2008.

27. **Mohan L. Verma**, Nirbhay K. Singh and Homendra Sahu

[Supercapacitors for hybrid electric vehicles: A survey and modeling of new control structure](#)

11<sup>th</sup> Asian Conference on Solid State Ionics, at BU-DRDO Centre for Life Sciences, Bharathiar University, Coimbatore, India, 9-13 June, 2008.

28. **Mohan L. Verma**, B.Keshav Rao, Arti Verma and Mimi Mukherjee

[Structural Characterization of Ionic Materials Applying Digital Image Processing of SEM/TEM Image : A novel Approach](#)

11<sup>th</sup> Asian Conference on Solid State Ionics, at BU-DRDO Centre for Life Sciences, Bharathiar University, Coimbatore, India, 9-13 June, 2008.

29. **Mohan L. Verma** and B.Keshav Rao

[Modeling of Space Charge Density in Nanocomposite Solid Electrolyte 0.9AgCl : 0.1SiO<sub>2</sub>](#)

Silver Jubilee International Conference, CONIAPS-X at Guru Ghasidas University, Bilaspur, Chhattisgarh, 12-14 JaN, 2008.

30. **Mohan L. Verma**, Mimi Mukherjee and Arti Verma

[Structural characterization of nano-crystalline CdS by digital image processing](#)  
Silver Jubilee International Conference, CONIAPS-X at Guru Ghasidas University, Bilaspur, Chhattisgarh, 12-14 JaN, 2008.

**2007**

31. **Mohan L. Verma**, K. Deshmukh and Anil Choubey

[Determination of Space Charge Dielectric Constant of b-AgI : A Preliminary Modelling](#)

National Conference on Physics of Nano Structured Functional Materials (BITCON 2007), Bhilai Institute of Technology-Durg (Chhattisgarh), 16-17 March 2007.

32. **Mohan L. Verma**, B.K.Rao & Mimi Mukherjee

[Modeling and evaluation of Ag<sup>+</sup> diffusion in nanocomposite electrolyte 0.9AgI:0.1SiO<sub>2</sub>](#)

National Conference on Physics of Nano Structured Functional Materials (BITCON 2007), Bhilai Institute of Technology-Durg (Chhattisgarh), 16-17 March 2007.

33. **Mohan L. Verma**, Mimi Mukherjee, S. Bhushan and Purna Bose

[Electro-optical studies of chemically deposited Lanthanum/Neodymium doped \(Cd-Pb\)S films](#)

National Conference on Physics of Nano Structured Functional Materials (BITCON 2007), Bhilai Institute of Technology-Durg (Chhattisgarh), 16-17 March 2007.

34. **Mohan L. Verma**, Anil Choubey, Mimi Mukherjee and B.K.Rao

[Trap modulated Mobility of Ag<sup>+</sup> ions in 0.9AgI:0.1SiO<sub>2</sub>: Modeling and Determination at room temperature](#)

National Conference on Advances in Electronic Materials and Devices (AEMDO7), Department of Physics, Guru Ghansidas University, Bilaspur, Chhattisgarh, 25-26 March, 2007.

35. **Mohan L. Verma** and Arti Verma

[Application of image processing in the characterization of nanomaterials](#)

National conference on-Horizons of electrolytic, electronics and photonic material physics, Shri Shankaracharya College of Engg. & Technology- Junwani, Bhilai, Chhattisgarh, 26-27 Oct-2007.

36. **Mohan L. Verma** and B. Keshav Rao

[Modeling of space charge density in nanocomposite electrolyte \(0.9AgI:0.1SiO<sub>2</sub>\)](#)

National conference on-Horizons of electrolytic, electronics and photonic material physics, Shri Shankaracharya College of Engg. & Technology- Junwani, Bhilai, Chhattisgarh, 26-27 Oct-2007.

37. M.Mukherjee, S.Bhushan and **Mohan L.Verma**



Photoconductive studies on chemically deposited doped and undoped (Cd-Pb)S films

National conference on-Horizons of electrolytic, electronics and photonic material physics, Shri Shankaracharya College of Engg. & Technology- Junwani, Bhilai, Chhattisgarh, 26-27 Oct-2007.

38. Mimi Mukherjee, **Mohan L. Verma** and Shashibhushan

Electro-optical properties of some chemically deposited rare-earth semiconducting film

National conference on-Horizons of electrolytic, electronics and photonic material physics, Shri Shankaracharya College of Engg. & Technology- Junwani, Bhilai, Chhattisgarh, 26-27 Oct-2007.

**2006**

39. Mimi Mukherjee, **Mohan L. Verma**, Swagota Sarkar and S. Bhushan

Photoconductivity and nanoparticle studies of some chemically deposited Cds & (Cd-Pb)S films

National Conference on Advances in Electronic Materials & Devices [AEMD-006], Department of Physics, Guru Ghasidas University-Bilaispur, Chhattisgarh, 5-6 March, 2006.

40. **Mohan L. Verma**, Mimi Mukherjee, B.K. Rao and O.P. Verma

A Preliminary modeling of ionic drift mobility of a nanocomposite 0.9 AgI: SiO<sub>2</sub>

National Conference on Advances in Electronic Materials & Devices [AEMD-006], Department of Physics, Guru Ghasidas University-Bilaispur, Chhattisgarh, 5-6 March, 2006.

41. **Mohan L. Verma**, Mimi Mukherjee, B.K. Rao and Lalit K. Bhaiya

A preliminary modeling of space charge dielectric constant of nano composite (0.9AgI:0.1 SiO<sub>2</sub>)

National Conference in Recent Trends in Material Science (RTMSO6), School of Physical Science, North Maharashtra University, Jalgon Maharashtra, 24-25 March 2006.

**Summary : Total International : 11, Total National : 30**

**(e) Conference/Workshop Attended**

1. A conference on National Science Day Feb 28, 1997 organized by MPCOST Bhopal at Pt. Ravishankar Shukla University Raipur.
2. National conference on Luminescence and its applications, Oct. 13-15, 1997, at School of studies in physics, Pt. Ravishankar Shukla University Raipur (C.G.).
3. A conference on the National Science Day Feb. 28, 1998, organized by MPCOST Bhopal at Pt. Ravishankar Shukla University Raipur.
4. Third National conference on Solid State Ionics, March 23-21, 1998. Dept. of physics, NERIST, Nirjuli (Itanagar) Arunachal Pradesh.
5. National conference on Science and Technology of Exotic Materials June 5-6, 1998. Dept of physics Barkatulla University Bhopal (M.P.).
6. Research Training Workshop, Nov. 22-28, 1998, Physics Dept. Banaras Hindu University Varanasi (India).
7. Sixth Asian conference on Solid State Ionics, Nov 29-Dec 4, 1998, Surajkund India.
8. 5<sup>th</sup> National conference on Solid State Ionics Feb. 15-17, 2002. Dept of physics Nagpur University Nagpur.
9. National Workshop on Physics & Applications of Luminescence to Nano-Science, Radiation Dosimetry & Geology” (NWPAL-09) by the Department of Applied Physics on 3-4 Dec. 2009.
10. 8<sup>th</sup> National Conference on Solid State Ionics: Materials for Novel Devices 2009, Sagar, M.P. India.
11. 11<sup>th</sup> National Conference on Solid State Ionics (NCSSI-11), Dept. of Physics, Tezpur University on 21-23, Dec. 2015.
12. 15<sup>th</sup> Asian Conference on Solid State Ionics at IIT, Patna, Bihar, INDIA on Nov. 27-30, 2016.



Place : **Bhilai**

Date : **21/05/2018**

( **Dr Mohan L Verma** )

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