



Prof. P. K. Khanna, PhD (IIT-Bombay), FMHAsc

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Editorial Board Member: Defence Science Journal, DRDO, (2015)

Editorial Board Member: Int J Green Nanotechnology (T&F USA)

Editorial Board Member: Int. J. Nanotechnology and Adv. Materials (nature publishing)

Guest Editor of Special issue of Int. Journal on Green Nanotechnology (Taylor and Francis,)

Editorial Board Member of Asian Polymer Journal (Formerly Asian Chitin Journal): An Int. Journal, 2012

CHAIRMAN- National Conf. on Chemistry of Chalcogens (NC3-2015), 12-13, Jan 2014, Pune, India

CHAIRMAN- RSC (UK) supported National Conf. called i-CNT, Oct 29-30, 2013, Pune, India

CHAIRMAN- National Conf. on Chemistry of Chalcogens (NC3-2013), 14-15, Jan 2013, Pune, India

CHAIRMAN- Int. Conf. Adv. Funt. Mater. For Defence (ICFMD-2012), 18-20 May 2012, Pune, India

SECRETARY-Int. Symposium on Materials Education (ISME-2011), Pune 26-28 March, 2011, Pune, India

Co-CONVENER-Int. conf. on Nanotechnology-(NANOCON 10), Pune 14-15th October, 2010, Pune, India

CONVENER-Int. Conf. on Nanomater for Electronics (ICNME-2006), Nov. 27-29, 2006, Pune, India

Career Objectives: A career involving Teaching and R&D on Inorganic /Materials Chemistry, Nano-chemistry and Nano-materials with particular emphasis on Magic-size NCs, quantum dots of semiconductors and metal nano-particles for defence, energy, electronics and optoelectronics, bionanotechnology & for general applications

Personal details: Born; March 23, 1963; married (2 children aged 19 and 14 years)

Research /Training /Employment History

Year	Institution	Position	Nature of work
10/1989-9/1992	a) Queens' University of Belfast, UK	Post-doc Res	Research in Organometallics
	b) University of Wales, Swansea, UK	Post-doc Res	Organometallic chemistry of selenium
2/1993 12/1993	Private Sector, Mumbai India	Research Executive	Research and Development in Organosilicon
1/1994 7/1995	IIT-Bombay, India	RA(CSIR-pool)	Transition Metal Chemistry
7/1995 6/1999	C-MET, Pune, India	Scientist-C	R & D in Organometallic & Materials Chemistry
3/1998 3/1999	University of St. Andrews, Scotland, UK	BOYSCAST Fellow (DST, Govt of India)	Research on Quantum dots of CdS from Organometallics
7/1999 6/2004	C-MET, Pune, India	Scientist-D	R & D in Organometallic & Nano- Materials/Quantum dots
2003 & 2004	Korea Research Institute of Chemical Technology, (KRICT) Daejeon, S.Korea	Brain Pool and Int. Fellow	Quantum dots of InP and PbSe from Organometallic reagents
7/2004 2/2011	C-MET, Pune, India	Scientist-E	R&D-NanoMaterials/Quantum dots
2008-09	KRICT Daejeon, S.Korea	BrainPool Scient	R&D on metal NPs for petroleum
2/2011 present	- DIAT, DRDO, Pune	Professor&HOD, Ex-Dean (Acs.)	Nanotechnology via Inorganic & Organometallic Chemistry

Education

Degree	Institution	Field(s)	Year
B.Sc.	Bundelkhand University, Jhansi, India	Chemistry	1979-81
M.Sc. (67%)	Bundelkhand University, Jhansi, India	Inorganic Chemistry	1981-83
Ph.D.* (cpi=7.54)	Indian Institute of Technology (IIT), Bombay, India	Organometallic Chemistry	1984-89/90

*Synthesis and reactions of ditellurides and tellurides, Ph.D. thesis, IIT, Bombay, India submitted in 1989, awarded in June 1990, Ph.D. advisor: Prof. H. B. Singh (SUBMITTED MY PHD THESIS AT THE AGE OF 26 YEARS AND 6 MONTHS)

Major Field of Interest:

- i) Nanotechnology via solution chemistry
- ii) Applied R & D in Nano-chemistry and Organometallic chemistry of selenium and tellurium
- iii) Quantum dots and Magic-sized NCs of semiconductor and their applications in solar cells and biology
- iv) Photocatalysis-effluent treatment
- v) R&D on nano-particles of metals and their chalcogenides
- vi) R&D on inorganic/polymer nano-composites e.g. QDs/metal/polymer
- vii) Nano-inks for electronics and Nanofluids for engineering applications
- viii) Sol-Gel Chemistry (mostly for nano-oxides)
- ix) Metal nano-particles for petroleum energy
- x) Metal Nano-particles for High Energy defence reagents

Awards/Fellowships/Honours:

- 1) **Editorial Board Member: Defence Science Journal, DRDO, (2015)**
- 2) **DIAT DRDO Researcher of the Year 2013**
- 3) **MRSI Medal Winner 2010** (Materials's Research Society of India)
- 4) **Ex-Member MRS-Singapore 2013-15**
- 5) Life member of Society for Materials Chemistry, BARC, Mumbai, India
- 6) **Editorial Board Member ; Frontiers in. Materials (Thin solid films) nature publishing**
- 7) **Editorial Board Member ; Int. J. Nanotechnology and Adv. Materials (nature publishing)**
- 8) **Guest Editor** of Special issue of International Journal on Green Nanotechnology:Physics and Chemistry (Taylor and Francis, USA)
- 9) **Editorial Board Member** of Asian Polymer Journal (Formerly Asian Chitin Journal): An International Journal, 2012
- 10) **Editorial Board Member of International J. on Green Nanotechnology:Physics and Chemistry** (Taylor and Francis, USA)
- 11) Brain Pool Research Scientist, 2008-09, S. Korea
- 12) **Winner of first prize for the best poster presentation award for, 'In situ synthesis of silver nano-particles in poly(ethylene glycol methacrylate phosphate) via photo-polymerization process and its application to uranium ion adsorption' 2nd Int. Symposium on Adv. Mater. & Polymers For Aerospace And Def. Applications (SAMPADA-2008) Dec 8-12, 2008, Pune, India**
- 5) **Best poster presentation award for 'Studies on Light Emitting 'Magic Number' CdSe in Commercial Polymethylmethacrylate', SAMPADA-2008, Dec 8-12, 2008, Pune, India**
- 5) **Winner of the best poster presentation award for, Silver nano-particles in poly(ethylene glycol methacrylate phosphate) and its application to uranium ion adsorption' DAE-BRNS International Symposium on Materials Chemistry (ISMC-2008) December 2-6, 2008, Bhabha Atomic Research Centre, (BARC), Mumbai, India**
- 7) **Elected Fellow of Maharashtra Academy of Sciences (FMASc), 2008, India**
- 8) **1st Prize winner at UK-Indo Workshop on Nanotechnology: "Making the leap towards commercialization"** organized by the British Council, Mumbai & NCL Innovation cell at Venture center, NCL, Pune, India, January 7-10, 2008 (jointly with, Dr Lele, Dr BLV Prasad of NCL-no certificate was awarded)
- 9) **Guest Editor of Special issue of 'J. Synthesis and Reactivity in Inorganic, Metal-Organic and Nano-Metal Chem.'** (Taylor & Francis, USA) vol. 37(1/2), 2007.
- 10) **Winner of best poster presentation award for 'Novel Approach to Transition Metal Phosphides', National workshop on Nanomaterials and Nanotechnology, University Lucknow and MRSI Lucknow, March 24-25, 2007**
- 11) **Expert group member of Department of Biotechnology (DBT) Govt. of India, core committee on nanobiotechnology (2006-2011 & 2011 till present)**
- 12) **Expert group member of Department of Biotechnology (DBT) Govt. of India, core committee for setting up of nanobiotechnology center at IIT Guwahati (2008-2013)**
- 13) **Winner of best poster presentation award for 'Nanotechnology via solution chemistry' at 17th AGM-MRSI, Lucknow, India, Feb. 13-15, 2006**
- 14) **First prize winner for poster presentation** in "Raman Memorial Conference", University of Pune, India, Feb. 24-25, 2006
- 15) **First prize winner for poster presentation** in "Raman Memorial Conference", University of Pune, India, Feb. 25-26, 2005
- 16) Invited for membership-American association for the advancement of science, 2003
- 17) Listed in Marquis who's who in Sc. & Engg, 2003-04
- 18) Brain pool research fellowship, 2003, S. Korea
- 19) Visiting scientist, KRICT, 2004, S. Korea

- 20) **Second best Poster Award** for the paper “**Thick film heat flux sensors using Ag/Ag-Pd thermopiles on alumina substrates**”, Presented in 8th National Seminar on Physics and Technology of Sensors (NSPTS), Indira Gandhi Centre for Atomic Research (IGCAR), Feb. 27th to Mar. 1st, 2001 at Kalpakkam, India.
- 21) Life member of Materials Research Society of India
- 22) Ex-associate member of Royal Soc. Chem., London
- 23) Boyscast fellowship (DST), Govt. of India, 1998-99
- 24) Research guide of Pune University, 2005-13, Pune
- 25) Research Guide of Bharti Vidyapeeth, 2002-07, Pune
- 26) Guest lecturer, Bharti Vidyapeeth, 2001, Pune
- 27) Associate member of Institute of Nanotechnology, UK
- 28) Post-doctoral fellow (CSIR), IIT-Bombay, 1994-95
- 29) SERC British post-doc-1989-92, UK
- 30) JRF/SRF (IIT-Bombay)-1984-89 and SRF-CSIR 1989

Association with scientific publishers:

Reviewer of the following journals: Chem. Mater. (ACS), J. Nanoparticles Res., (Springer), JNN (ASP J. Mater. Sc (Elsiever), Synthetic Metals, (Elsiever), Applied Nanosciences, Mater. Chem. Phys., (Elsiever), Mater. Lett., (Elsiever). Eu. Poly. J., Ind. J. Chemistry **A**, Bull. Mater. Res. (MRSI) (Springer) and Indian Defence Journal., Colloids and Surfaces A: Physicochemical & Engineering Aspects, Applied Clay Science etc. (Elsiever), J Alloys & Composites, etc

Expert committee member of the scientific bodies:

DBT-2006-09 & 2009-2012 (Nanobiotechnology), DIT (Nanotechnology initiative: 2003) of Govt. of India

DBT-2009-2014 –Nanobiotechnology for IIT Guwahati

International Research Collaboration:

Prof. Andrew Grimsdale, (NTU, Singapore) Prof. R Renugopal Krishnan (USA), Dr. S. Priyadarshy (USA), Prof. C.P. Morley (University of Wales, Caediff), Prof. D. J. Cole-Hamilton (University of St. Andrews) UK, Dr. K-W Jun, Dr. J-O. Baeg (S.Korea) Prof. Sergey Maskimenko (BSU, Minsk, Belarus). Prof. Jin Hyeok Kim, Chonnam National Univ. Gwangju, S. Korea)

Conferences/symposia/workshops organized:

1. International Symposium on Homogeneous Catalysis, University of St. Andrews, Fife, Scotland, UK, July, 11-17, 1998 (**Organizing volunteer**)
2. One-Day Workshop on Materials Characterization and Testing Organized at C-MET, Pune, India, Feb.22, 2001 (**Organizing member**)
3. Half-day Symposium on nano-materials-Recent Happenings, Organized by Materials Research Society of India (MRSI) Pune chapter, University of Pune, India, August 8, 2003 (**Convener/co-ordinator**)
4. One-day seminar on Advanced Surface Engineering, Organized by MRSI, IIM and Multi-arc (I) Ltd, Pune, Jan. 8, 2004 (**Organizing member**)
5. MRSI 16th AGM, Feb. 10-12, 2005 NCL, Pune, (**Organizing committee member**)
6. Convener of ICNME, International Conference on Nanomaterials for Electronics (ICNME-2006), Nov. 27-29, 2006, Pune, India (**Convener**)
7. Foundation day celebration of C-MET, March 8, 2000, 2003 and 2007 Pune, India (**Compere**)
8. Organizing member of International Symposium on Advanced Materials and Polymers for Aerospace and Defense Applications (SAMAPADA), Dec 8-12, 2008, Pune (**Organizing member**)
9. **Co-Convener of NANOCON2010**, Int.Conf. on Nanotechnology organized by Bharti Vidyapeeth Deemed Univ and C-MET, Oct. 14-15, 2010
10. **Organizing Secretary, ISME**, International symposium of materials Education, organized by IISER, NCL C-MET, and DIAT, Pune, March 26-27, 2011
11. **Chairman, IYC-2011 Celebration, DIAT, Pune 7 Dec. 2011**
12. **Chairman, Int. Conf. on Functional Materials for Defence, (ICFMD-2012) May 18-20, 2012**
13. **National Conf. on Chemistry of Chalcogenes (NC3-2013), 14-15, Jan 2013, Pune, India**
14. **Chairman, RSC (UK) supported i-CNT-2013, DIAT, Pune Oct 29-30, 2013**
15. **National Conf. on Chemistry of Chalcogenes (NC3-2013), 12-13, Jan 2015, Pune, India**

Manpower development:

Technical Staff and Scientists Supervised and Trained :

10 permanent staff

Postdoctoral fellow appointed and supervised:

04

DST Young Scientists appointed:

02

Project staff:

10

Projects Undertaken:

- 1 A two-year project funded by ARMREB, DRDO-to be implemented from APRIL 16-Ignitor delay material
- 2 A two-year project funded by DST- Ongoing (May 2015-17)- QDs-Graphene composites
- 3 A two-year project funded by DIAT, DRDO-completed (Oct. 2013-15)- Nanoink
- 4 A three year project has been sanctioned by DST completed (June 2012-15)- MSNCs & QDs
- 5 A two-year project funded by DRDO-completed (June 2012-15)- MO/Poly. Nanocomposite
- 6 A three project has been funded by DST completed
- 7 A two year project funded by MNES completed
- 8 A three project funded by DST completed
- 9 A three year project funded by DIT completed
- 10 A three year project by DST Young Scientist completed
- 11 A one year project funded by DST completed
- 12 A one year project funded by ISRO completed
- 13 Process development of Semiconductor Grade Sulfuric Acid (DoE) completed
- 14 Process development of Semiconductor Grade Methanol (DoE) completed
- 15 Process development of Submicron size Silver Powder (internal-DoE) completed
- 16 Development of MOCVD precursors (DoE)-completed

Instrument exposed to/handled:

Absorption spectroscopy i.e. UV-Visible and IR (far-mid-near), Multinuclear solution NMR, Powder X-ray diffractometer, Scanning electron microscopy/Energy dispersive spectroscopy (SEM/EDAX), Transmission electron microscopy (TEM), Photoluminescence (fluorescence) spectroscopy, X-ray photoelectron spectroscopy, Particle size analyzer and Thermal analysis .

Students Supervised: >25

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|---|---------------------------------------|
| A. Informal: | 11. Three M.Sc.(Chemistry) 2005 |
| 1. One M.Sc. at IIT Bombay | 12. Two M.Sc.(Chemistry) 2006 |
| 2. One Ph.D. and Two B.Sc. in Swansea, UK during post-doc | 13. Two M.Sc.(Chemistry) 2007 |
| 3. One Ph.D. at IIT Bombay at post-doc | 14. One M.Sc.(Environ. Sc) 2007 |
| B. Formal at C-MET | 15. One B.E. (Chemical)-2008 |
| 4. Two B.E. (Chemical)-2000 | 16. Two M.Sc.(Chemistry) 2008 |
| 5. One M.Sc. (Instrument)-2001 | 17. One BTech.(Electronics) 2008 |
| 6. One M.Sc. (Physics)-2001 | 18. Three M.Sc. (Chemistry) 2009 |
| 7. Four B.E. (Electrical)-2002 | 19. Two MSc (Chemistry) 2010 |
| 8. Two M.Sc.(Physics)-2003 | 20. PhD students: 8 (persuing) |
| 9. Two M.Sc (Physics) 2004 | 21. BTech.Project-03 ; 2011-12 |
| 10. Two M.Sc.(Physics) 2005 | 22. MTech. <u>2012-15:07</u> |

REFERENCES

Name and Designation	Address
1. Prof. C.P.Morley, Director of Teaching	School of Chemistry, Main Building, Cardiff University, Cardiff,CF103AT,UK; Tel +44 (0)29 20874023 Fax +44 (0)29 20874030, Email: morleycp@Cardiff.ac.uk
2. Prof. D.J.Cole-Hamilton, Irvine Professor of Chemistry	School of Chemistry,University of St. Andrews, Fife, St. Andrews, Scotland, UK ; WWW: http://ch-www.st-and.ac.uk/staff/djc/ Tel: +44-1334-463805; Email: djc@st-and.ac.uk
4. Vice-chancellor, DIAT	DIAT, DRDO, PUNE vc@diat.ac.in

Highlights of Past and Present Research and Current Interests

Ph.D at IIT Bombay, India (1984-89/90)

Extensively worked on organo-tellurium compounds with a view to discover novel organo-tellurium compounds such as ditellurides and tellurides by exclusive use of alkalimetal tellurides as source of Te-insertion. The aim of the research was to discover semi-conducting materials or organic metals. Various organic compounds were synthesized that were used as the starting reagents. The reactions were carried out under the inert atmosphere of argon or nitrogen and the use of Schlenk type apparatus were the key to this research. In the process, 1,2-ditelluran was discovered by me. Several alkyltelluro-bromo species were synthesized by novel methods. The charge-transfer was observed in some of the compounds suggesting their potential to be semi-conducting in nature. The acceptor molecules were normally organic in nature such as TCNQ, DDQ and TCNE. The absorption spectroscopy was used to understand the charge-transfer. The organic tellurium compounds were also tested for their ability to donate lone pair of electron to sigma acceptors such as transition metals. A series of palladium complexes were prepared and studied. Five research papers were published in Journal of high repute.

Post-doctoral at Belfast and Swansea, UK (1989-92)

Research on chemistry of 1,2,3-selenadiazole and its coordination complexes with organo-transition metal compounds in order to prepare novel one-dimensional semi-conducting or conducting materials. The square planer metal complexes of 1,2-diselenenolene ligands were expected to behave superior than corresponding dithiolene complexes. The project involved extensive use of inert atmosphere synthetic methodologies as well as characterization tools such as proton, phosphorus and carbon NMR, FTIR, UV-Visible spectroscopy and microanalysis. The results were published in international journals of repute as evident in CV.

Private Sector R&D, Bombay, India (1993)

Hydrosilation: The functional chlorosilanes were hydrosilated by use of chloroplatinic acid in order to prepare gamma-chlorotrichlorosilane that can further be used for preparation of various silicones for textile and leather industry. The process was developed at laboratory level.

Post-doctoral at IIT Bombay, India (1994-95)

Research on Transition metal complexes of diimine ligands in order to synthesize useful metal complexes for their fluorescent properties as well to see if some of these can so non-linear optical properties. A Ph.D. student was supervised.

R&D of Electronic Materials at C-MET, Pune, India (1995-to-date)

The development of processes for high purity organic solvents and mineral acids lead to a couple of patents. Current interests include research on development of chemicals for electronics and research on nano-particles of semiconductors and transition & noble metals. Various industry collaborated and core grant projects have been completed. The development of silicon-phosphorus paste has been carried out for its use in solar cells. The grant-in-aid projects from various ministries are currently on-going.

Research on Quantum Dots of CdS and its composite with polymer at Univ. of St. Andrews, Scotland (1998-99)

During one year research training at with Prof. D. J. Cole-Hamilton at St. Andrews, the research was mainly focused on synthesis of quantum dots of cadmium sulphide to trap the possible blue light emission for various commercial applications. The CdS quantum dots were generated in polymer solution and it was possible to observe blue light emission that later turned orange. This offered a great possibility for this material to be able to show tuned emissions. The emission can be tuned for a variety of colors such as blue, green, orange and red. The composite was however, not stable for a longer period. The more studies are currently undertaken by my post-doctoral researcher. An air stable blue and orange light emitting composites have been prepared.

Research on QDs of InP & PbSe, Korea Res. Inst.Chem.Tech., S.Korea (2003 & 2004)

The work on colloidal synthesis of organically capped Indium Phosphide and lead selenide quantum dots was carried out. The organometallic precursors used for the synthesis were prepared and the new methods were adopted to suite the latest techniques for such high-tech materials. The use of single source precursors and its thermolysis to generate InP was main task. Also the direct use of phosphine gas with Indium metal salt was carried out in order to synthesize InP nano particles. A New method for preparation of indium phosphide and lead selenides was established. Size typically below 5 nm. Discovered the catalytic P-C bond cleavage in TOP for synthesis of InP. The work has been cited in many researchers articles published by the ACS Journals.

Research and projects on Nanoscience at C-MET, Pune (1995-2011)

Under the department of Information Technology, Govt. of India, three successive five-year research programmes on **MOS and MOCVD chemicals, Quantum dots-polymer composite and development of quantum dots for opto-electronics and electronics** were initiated and completed. Several projects sponsored by the govt. agencies including the most latest on **quantum dots (driven from the Organometallic Chemistry)** was handled by the applicant as principle investigator. The total outlay for such programmes normally ranged from INR 100-200 Lakh (~200-400,000 US\$). The programme were aimed at developing nano-technology of semi-conducting materials that show light emitting properties due to tuned band-gap energies. The range of colours from the visible spectrum is targeted to be achieved by means of size quantization of II-VI, IV-VI and III-V semiconductors by chemical methods *via* use of inorganic and organometallic chemistry. To boost the research activities in this area the several government funding agencies had extended the financial support for the work. About US\$ 200,000.00 grant-in-aid was generated by me during my association with C-MET, Pune.

During my being at C-MET, I have also undertaken 03 foreign visits to exclusively conduct research on quantum dots by use of organometallic and inorganic chemistry which later formed a strong basis for research in quantum dots at C-MET. My work at C-MET resulted in a process for laboratory scale (pilot scale) quantum dots of metal selenide, Light emitting quantum

dots, trapping of magic-number clusters, nano-silver, copper, nickel and others for a variety of applications. Other significant contribution has been the appointment of young scientists supported by DST and research associates/post docs (RA-I) on regular basis for the research activities. Such post-doc appointments. Like-wise, I have significantly contributed in the growth process of my previous organization by organizing a few international conferences. I have been supported by DST, MNES, DIT for my research through grant-in-aid projects for a duration ranging from 2-5 years. I have successfully completed 07 projects on the subject sponsored by DST, ISRO, MNRE and DIT. I had created a well equipped laboratory to do organometallic/inorganic and nano-chemistry in the area covering about 2000 sq.ft. at C-MET, Pune.

Current interest at DIAT

Over the years I have done a great deal of inorganic chemistry that has been extensively applied for research and development in Nano-chemistry via synthetic chemistry and materials chemistry which is supported by a large number of international publications. I have designed programme on nano-science and nano-technology keeping, Chemistry as a main focus. Since I have background in organometallic chemistry, my research interests are revolving around the synthesis of various nano-particles by implying organometallic chemistry routes and solution reaction mechanism. In addition to it, direct inorganic coordination chemistry based methodology is also being applied in my programme. Due to this creative initiative taken by me, the department of chemistry at DIAT, in now having almost all programmes revolving around applied chemistry leading to nanomaterials and polymer composites for their application in defence sector. Most of my research will normally be supported by PhD, MTech students and project assistants as well as MSc students of local colleges and of Pune University. Currently I am supervising 3 PhD students and 3 BTEch students in the area of defence related topics.

I am mainly active in the following areas;

- 1 FUNCTIONAL MATERIALS via synthesis of new organometallic compounds of selenium and tellurium by organometallic and inorganic chemistry including surface science, chemistry of surfactants, organic-inorganic hybrid systems for energy applications and defence requirement
- 2 NANOSCIENCE, Nanochemistry and Material science including nano-composites and their assorted alloy compositions etc. for synthesis of quantum dots, metal and metal oxide nano-particles and NPs/polymer composites for sensor, solar cell and LED.

PROJECT HANDLED AT C-MET, PUNE

Title of the project	Sponsoring agency	Outlay, manpower and duration	Proposed outcome from the project
A. CORE PROJECTS*			
VIII TH FIVE YEAR PLAN of the Govt. of India Development of MOS grade chemicals	DIT/CMET	1992-1997 as per the EFC documents ~Rs. 100.00 lakh	Development of MOS grade chemicals-high purity organic solvents with only ppb level trace metal impurities for their application in semiconductor devices cleaning and etching
IX TH FIVE YEAR PLAN of the Govt. of India Processes for MOCVD chemicals.	DIT/CMET	1997-2002 ~Rs. 100.00 lakh as per the EFC documents	The organo-cadmium and tellurium precursors for semiconductor devices-various reaction using advanced organometallic chemistry for synthesis of air and light sensitive compounds
X TH FIVE YEAR PLAN of the Govt. of India Quantum dots-polymer composite for display devices	DIT/CMET	2002-2007 ~Rs. 60.00 lakh as per the EFC documents	Light emitting QDs of II-VI semiconductors embedded in polymer and thin films via spin coating method. Study of optical properties and tuned band gap energy
XI TH FIVE YEAR PLAN of the Govt. of India Development of quantum dots	DIT/CMET	2007-2012 ~Rs.157. 00 lakh as per the EFC	Development of Q-dots for electronics and optoelectronics-the synthesis of surface capped semiconductor nano-particles of group II-VI, IV-VI, III-V and their composites with polymer for their application in photonics
B. SPONSORED PROJECTS			
Development of CdS nano-powder for solar cell applications	ISRO	2001-2002, Rs. 2.00 Lakh One project staff August (200,000 INR)	Nano-particles of CdS prepared/synthesized by organometallic chemistry to generate high surface area and better optical properties
Light emission from quantum dots of CdS	DST	2002-2003, Rs. 2.50 Lakh One project staff August (250,000 INR)	Organometallic synthesis of quantum dots that can generate light upon irradiation of UV source and thus proposing applications in display devices
Development of phosphorus – paste (an organo-phosphorus formulation) for solar cell applications	MNES	April 2003-2005 Rs. 11.00 Lakh One RA-I (11,00,000 INR)	Synthesis of organo-silicon network and incorporation of phosphorus via functionalization of siloxane network
Light emission from Q-dots of CdS: synthesis, characterization and thin film preparation	DST	August 2003-2006 Rs. 10.00 Lakh One RA-I (10,00,000 INR)	Organometallic synthesis of quantum dots for applications in display devices

Synthesis of noble metal nano-particle for electronics application	DIT, MCIT	April 2004-Sept 2009 Rs. 51.30 lakh Two research staff (51,30,000 INR)	Organometallic chemistry for synthesis of metal nano-particles via reduction of higher oxidation state to zero-valency through controlled use of surfactants
Studies on surface capped semiconductor quantum dots	DST	July 2007- July 2010 Rs. 18.00 Lakh One RA-III (18,00,000 INR)	Organometallic/Inorganic synthesis of CdSe and other chalcogenides for use in opto-electronics via tuning of their optical properties.
Synthesis of metal phosphides for electronic application	DST Young Scientist Scheme	October 2005-June 2007 Rs. 12.00 Lakh Awardee himself was staff (12,00,000 INR)	Organometallic chemistry for synthesis of metal phosphide nano-particles via cleavage of P-C bonds in organo-phosphorus compounds

DIT; Dept. of IT, DST; Dept. of Sc. &Tech., ISRO; Indian Space research organization, MCIT; Ministry of Commun. & IT, MNES; Ministry of Non-Conventional Energy Sources.

***The core budget at C-MET was handled by CAs and it was subject to change time to time**

List of PUBLICATIONS

A. **RESEARCH PAPERS PUBLISHED IN THE FIELD OF NANO-SCIENCE/NANO-CHEMISTRY**

BOOK CHAPTER: (02)

- Studies on gas sensing performance of bulk and nano-Ag doped ZnO thick film resistors**, M.K. Deore, V.B. Gaikwad, D.D. Kajale, N.K.Pawar, D.N. Chavan, S.D. Shinde, **P.K. Khanna**, G.H. Jain, SPRINGER BOOK SERIES, Volume 49, Doi; 10.1007/978-3-642-00578-7, Recent Advances in Sensing Technology, Lecture notes in Electrical Engineering, ISSN; 1876-1100 (Print) 1876-1119 (Online) Springer Berlin Heidelberg.
- Ultrasonic processing for synthesis of nanocomposite via in-situ emulsion polymerization and their applications**, Shirish H. Sonawane, Bharat A Bhanvase, Ravindra.D.Kulkarni, **Pawan K Khanna**, Pan Stanford Publishing, Singapore, a leading publisher in Nano related books. The title of the proposed book is, **Cavitation: A Novel Energy Efficient Technique for the Generation of Nanomaterials**, the Editors-Sivakumar Manickam and Muthupandian Ashokkumar PP 301-333, **2014** Pan Stanford Publishing (Chapter No. 10).

Under preparation

- Novel Zn and Cd complexes of cycloalkeno semicarbazone and their utility as precursors to respective metal chalcogenide QDs**, Aditi Jadhav, Vaishali, Dhanve, Poonam Kolaskar and PK Khanna (**under preparation**)
- Applications of Nano Fluid in Photocatalysis for dye degradation**, Ujjawal Bhagat, Anuraj Kshirsagar and PK Khanna (**under preparation**)
- Novel Copper (II) Complexes of Semicarbazones: Synthesis, Electrochemical and Antibacterial Study**, Vaishali P. Dhanwe, Anuraj S. Kshirsagar, Vividha V. Dhapte, Vishwas Dhapte, **P.K. Khanna**, (**Under preparation**).

IN 2016 (6)

- Novel Solventless Synthesis of 5-Phenyl-4-methyl-, 4-Phenyl-5-propyl- and Series of Related 1, 2, 3-selenadiazoles and their Antimicrobial Studies**. Aditi A. Jadhav, Vaishali P. Dhanwe, Prasad G. Joshi, **Pawan K. Khanna**, **Cogent Chemistry**, T&F, (**in press**) **2016**.
- Cytotoxicity Studies of II-VI Semiconductor Quantum Dots on various cancer cell lines**, Sreenu Bhanoth, Aakriti Tyagi, Anita K. Verma and Pawan K. Khanna, **Adv. Mater Lett., VBRI PRESS (in press) 2016**
- Colloidal Silver Nanoparticles Based Antimicrobial Cotton Fibres**, Pawan K Khanna, Pranali Hunnargikar, Prasad G Joshi, Anuraj Kshirsagar (**submitted** to ANN-ASIA) 2016
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25. Sreenu Banoth, Ramana Rao, P Rajendra, P.K. Khanna, a poster on “CdSe quantum Dots sensitized Titania Films photonodes for solar cells” in National Conference on “Chemistry of Chalcogen” organized by Defence Institute of Advanced Technology Pune, 14-15th Jan 2013
26. Aditi Jadhav, P. G. Joshi, P. K. Khanna, poster presentation on ‘Chemistry of Selenadiazoles-Organoselenium Compounds’ in National Conference on “Chemistry of Chalcogen” organized by Defence Institute of Advanced Technology, 14-15th Jan 2013. **(Winner of best poster award winner)**
27. Vaishali Dhanwe, Aditi Jadhav, P. G. Joshi, P. K. Khanna, poster presentation on “Applications of Semicarbazones for their respective selenadiazoles”. In National Conference on “Chemistry of Chalcongess” organized by Defence Institute of Advanced Technology, Pune, 14-15th Jan 2013.
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30. Sreenu Bhanoth and P. K. Khanna, Synthesis of core–shell ZnSe/CdSe by use of cyclohexeno-1,2,3-selenadiazole. 1st International Conference on Functional Materials for Defence Application (ICFMD-2012), DIAT, Pune, 8-20 May, 2012.
31. Effect of Irradiation by 120 MeV Si¹⁰⁺ Ions on the Optical and Electrical Properties Of PMMA/silver Nanocomposites by Chaitali Gavade, N.L. Singh, P. K. Khanna, Fouran Singh, International Conference on Materials for Advanced Technologies (ICMAT-2011) during 26th June- 1st July 2011 at Suntec, Singapore (Oral Presentations).
32. Effect of Ion Beam Irradiation on the Magnetic and Electrical Properties of Polystyrene (PS)/Nickel Nanocomposite by N.L. Singh, Chaitali Gavade, P.K.Khanna, Sunil Shah, International Conference on Materials for Advanced Technologies (ICMAT-2011) during 26th June-1st July 29, 11 at Suntec, Singapore (Oral Presentations).
33. Simplified polymerization of pyrrole by Shubhangi R. Damkale, **Neda Farhan**, Kunal H. Kate and **P. K. Khanna**, International Symposium on Materials Education, March 26-28, 2011 at Yashada (organized by IISER, NCL, C-MET and DIAT, Pune) **(Winner of one of the IIIrd prize for best poster presentation)**
34. Synthesis and optical properties of hydrophilic quantum dots of CdSe by K. Dhanabalan, Shubhangi R. Damkale, K. Gurunathan and P. K. Khanna, International Symposium on Materials Education, March 26-28, 2011 at Yashada (organized by IISER, NCL, C-MET and DIAT, Pune)
35. Fabrication and Optical properties of ZnO/PMMA nano-composite film Shubhangi R. Damkale, Ganesh Lonkar, Kunal H. Kate and P. K. Khanna, International Symposium on Materials Education, March 26-28, 2011 at Yashada (organized by IISER, NCL, C-MET and DIAT, Pune)
36. Effect of SHI irradiation on dielectric spectroscopy and thermal properties of silver nanoparticle embedded polystyrene matrix by Chaitali Gavade, N.L.Singh, Anita Sharma, P.K.Khanna, Fouran Singh, International Conference on Swift

- Heavy Ions in Materials Engineering and Characterization (SHIMEC 2010), Oct.6-9,2010, IUAC, New Delhi- Oral Presentation
37. "Green" synthesis of metal selenide nanocrystals: the scope of 1,2,3-selendiazoles in the synthesis of magic-size nanocrystals and quantum dots, R. K. Beri and P. K. Khanna, International conference on nanotechnology-materials and composites for frontier applications (NANOCON 10), Bharti Vidyapeeth, Pune 14-15th October 2010
 38. Novel organometallic synthesis of nano-sized silver selenide: a potential magneto-resistive material, R K. Beri, A. K. Viswanath and P. K. Khanna, Int. Workshop and Symposium on glass/glass ceramic materials, July 7-11, Pune, 2010
 39. Glycerol Mediated Low Temperature Synthesis of Nickel Nanoparticles by Solution Reduction Method. Kalpana Singh, Kunal H Kate, C.V.V.Satayanarayana, P.K.Khanna , International conference on nanotechnology-materials and composites for frontier applications (NANOCON 10), Bharti Vidyapeeth, Pune 14-15th October 2010
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 42. *In situ* synthesis of silver nano-particles in poly(ethylene glycol methacrylate phosphate) *via* photopolymerization process and its application to uranium ion adsorption by Sadanand Das, A.K. Pandey, V.K.Manchanda, A.A.Athawale, P.K.Khanna, 2nd International Symposium on Advanced Materials And Polymers For Aerospace And Defense Applications (**SAMPADA-2008**) Dec 8-12, 2008, Pune, **India (Winner of best poster presentation award)**
 43. Studies on Light Emitting 'Magic Number' CdSe in Commercial Polymethylmethacrylate by B.Bharate, Priyesh More, A. K. Vishwanath, and P. K. Khanna 2nd Int Symposium on Advanced Materials And Polymers For Aerospace And Defense Applications (**SAMPADA-2008**) Dec 8-12, 2008, Pune, India (**Winner of best poster presentation award**)
 44. One-Pot Synthesis of Cobalt and Nickel Nanoparticles by Priyesh More, Jagdish Jawalkar, B.G. Bharate and P.K. Khanna, 2nd International Symposium on Advanced Materials And Polymers For Aerospace And Defense Applications (**SAMPADA-2008**) Dec 8-12, 2008, Pune, India
 45. A Novel single source precursor for CdSe quantum dots by P.K. Khanna, Rahul Shewate, Priyesh More, B.G. Bharate, R.K. Beri, A.K. Vishwanath. 2nd International Symposium on Advanced Materials And Polymers For Aerospace And Defense Applications (**SAMPADA-2008**), Dec 8-12, 2008, Pune,
 46. Green synthesis of "Magic-sized" CdSe quantum dots by Rupinder Beri and P.K.Khanna 2nd International Symposium on Advanced Materials And Polymers For Aerospace And Defense Applications(**SAMPADA-2008**), Dec 8-12, 2008, Pune, India
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 51. Large scale synthesis of Palladium nano-particles at ethanol/water refluxing Temperature: synthesis of Ag-Pd alloy via palladium seeds P.K.Khanna, B.G.Bharate International Conference on Biomedical Engineering & Nanotechnology (**ICBENT-2008**) Kolhapur, India, October 21-23, 2008
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 123. 11th Int. Symp. on Homogenous Catalysis, St. Andrews, Scotland, July, 1998- attended
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 132. Heterocyclic tellurium compounds as ligands: some complexes of Pd(II), P. K. Khanna & H.B.Singh, 7th Annual Conf. Indian Council of Chemists, Gwalior, India Dec., 1988.
 133. Charge transfer in organotellurium compounds: synthesis of DDQ complexes of organic tellurides by H.B.Singh, S.K.Kumar and P.K.Khanna, National Symposium in Modern Trend in Inorganic Chemistry, IIT Madras, Jan., 1988.
 134. Charge-transfer in organotellurium chemistry by H.B.Singh, S.K.Kumar and P. K. Khanna, National Symposium on Unusual Valency States in Co-ordination Compounds, BARC, Bobmay, Nov. 1987.
 135. Heterocyclic tellurium compounds as ligands: some complexes of Pd(II) By P. K. Khanna, Research Scholar Meet, University of Bombay, Oct. 1987.
 136. Synthesis of 1,2-ditelluran by H.B.Singh and P. K. Khanna, 5th International Symposium on the Chemistry of Se and Te, Oak Ridge, Tennessee, USA, August, 1987.
 137. Charge transfer complexes, Synthesis of 3,5-naphtho-1-telluracyclopentane; a new electron donor by H.B.Singh, S.K.Kumar and P. K. Khanna, National Symposium on Organometallic Compounds, Darjeeling, India, April 1987.

F. OTHER PRESENTATIONS

- Light Emission from Quantum Dots in Polymer: synthesis, characterization and thin films preparation to **PAC of DST, Department of Chemistry, Jammu University, Jammu, India, April. 29, 2006 (an extended presentation for members and students)**
- Tuned Optical Properties from Inorganic/Polymer Nano-composites, Advanced Polymer for photonics, **DIT meeting of the peer group, DIT, New Delhi, Nov. 9, 2005**
- 3. Synthesis of Nano-particles of Noble and Transition Metals for Application in Electronic packaging and Optoelectronics, **Working Group Meeting, DIT, New Delhi, Nov. 2003**
- Light Emission from Quantum Dots of CdS in Polymer: synthesis, characterization and thin films preparation to **PAC of DST, Dept. of Chemistry, IIT Madras, Chennai, India, Feb. 14, 2002**
- Development of nano sized CdS for solar cell application to **PAC of DRDO/ISRO/UoP CELL, University of Pune, June 2002**
- Tuned Light Emission from Quantum Dots of CdS in Polymer: synthesis, characterization to **PAC of DST, National Chemical Laboratory, Pune, India, August, 2001**

G. INVITED LECTURES DELIVERED

1. Pt-metal complexes of 1,2,3-Selenadiazoles—a lecture by P. K. Khanna, Royal Society of Chemistry Centenary Lecture and One-day south-west Meeting, University of Bath, England, March, 1991.
2. Nano particles of CdS and CdSe: Synthesis and Characterization Department of Chemistry, IIT, Delhi, India, April, 2001
3. Nanotechnology at C-MET: Prospects and Future, National Nano Technology Initiative of Department of Information Technology, Govt. of India, New Delhi, August, 2002
4. Nano particles of CdS and CdSe via Organometallic Chemistry, Institute of advanced materials, KRICT, Daejeon, S.Korea, January, 2003
5. Synthesis of Quantum dots of Indium Phosphide using Organometallics Institute of advanced materials, KRICT, Daejeon, S.Korea, Feb., 2003
6. Nano particles of II-VI and III-V semiconductors via organometallic chemistry, Pohang Superconductivity Center Pohang Institute of Physics, POSTECH, Pohang, S.Korea, March, 2003
7. Nanoparticles-Synthesis in Polymers, “Half-day Symposium on nano-materials-Recent Happenings”, Organized by Materials Research Society of India (MRSI) Pune chapter, University of Pune, India, August, 2003
8. Physics and Chemistry of Nano particles of Semiconductors, Science College, Jamner affiliated to North Maharashtra University Jalgaon, India, August, 2003
9. Materials chemistry of 1,2,3-selenadiazoles, IXth International conference on the chemistry of selenium and tellurium (ICCST-9), IIT-Bombay, Mumbai, India, February, 2004

10. Cycloalkeno-1,2,3-selenadiazoles: novel source of Se for metal selenide synthesis, Institute of advanced materials, KRICT, Daejeon, S.Korea, March, 2004
11. An effective synthesis of nano crystalline InP from Na₃P, KSIEC Spring Meeting, S.Korea, May 7-8, 2004
12. Organometallic compounds as useful precursors to nanomaterials: The material chemistry aspect of 1,2,3-selenadiazole, Winter School on Smart Materials, MNNIT, Allahabad, India, Dec. 9, 2004
13. Challenges in processing of polymer nanocomposites via organometallics, Winter School on Smart Materials, MNNIT, Allahabad, India, Dec. 9, 2004
14. Synthetic aspects of quantum dots of semiconductors- the challenges for the material scientists, NCBM-2004, Hyderabad, India, Dec. 26-27, 2004
15. Synthesis of nano particles of silver and gold by solution methods, International conference on business opportunities in microsystems and nanotechnology, Pragati Maidan, New Delhi, India Feb. 3-4, 2005
16. Processing and optical properties of semiconductor/polymer nano-composites, International Conference on Advances in Polymer Blends, Composites, IPNS and Gels: Macro to Nano Scales, Kottayam, Kerala, March 21- 23, 2005
17. Challenges in chemical processing of nano-materials, National Conference on Nanotechnology, AMITY, Noida, New Delhi, May 27-28, 2005
18. Nanotechnology and Nano-materials, Central School 9 BRD Air force station Viman Nagar, Pune
19. Chemical synthesis of quantum dots of semiconductors- the challenges for the material scientists, National Symposium and Conference on Solid Chemistry and Allied Areas, Goa University, Goa, December 1-3, 2005
20. Optically tuned nano-crystals of semiconductors and metals, Nanoscience and Nanotechnology, Belarus-India joint seminar, ARCI, Hyderabad, Dec.21-22, 2005.
21. Nanomaterials and Nanotechnology at C-MET-an overview, Taiwan-India joint seminar, University of Hyderabad, Hyderabad, March 14-15, 2006.
22. 'Top-down' method for generation of re-dispersible silver nano-particles, Recent Trends in Nanomaterial Science", B.M. Birla Science Centre, Hyderabad, organized by the Academy for Science, Technology and Communication, Hyderabad, India, 26th August, 2006
23. Large-scale preparation of nanomaterials by solution chemistry, International Conference on nanomaterials for electronics, ICNME-2006, C-MET, Pune, India, Nov. 27-29, 2006.
24. Chemical Processing of Nanomaterials: metals and semiconductors, National workshop on Nanomaterials and Nanotechnology, University of Lucknow & MRSI Lucknow, March 24-25, 2007
25. Is synthesis of quantum dots still challenging ?, ICMAT, Singapore, July, 2007 (did not attend)
26. Chemical processing of Nanomaterials for their applications in electronics, Nano Technology and its Application. Organized by IRMRA (Indian Rubber association) jointly with BARC, 16th and 17th March 2007.
27. Semiconductor quantum dots: Tuning of optical properties, Nano Technology and its Application. Organized by IRMRA (Indian Rubber association) jointly with MITCON, 26th and 27th Sept 2007.
28. New solution methods for synthesis of metal nano-particles for a wide range of applications, BIOVISION 2007, International Symposium on Bioengineering for Environmental Management, Sahrdaya College of Engineering and Technology, Kodakara, Thrissur, India, 22-24, October 2007.
29. Green synthesis of surface capped metals nano-particles: The Chemistry and the Nanotechnology, National Conference on Nanomater. & Nanotech., University of Lucknow/MRSI, Lucknow, India, Dec. 8-10, 2007
30. Synthesis of Nano-particles of silver from biologically useful reagents: the Chemistry and the Nanotechnology, International conference on natural polymers, bio-polymers, bio-materials, their composites, blends, IPNS and gels: macro to nano scales-2007, November 19-21, 2007, Institute for macromolecular science and engineering, Parumabikadu PO, Kottayam, Kerala
32. India Synthesis of metal nano-particles and their possible use in pharmacy, Poona College of Pharmacy, Feb.05, 2008
33. Nano-metals and quantum dots in polymers, National Seminar on Role of Nano-Technology in Polymer and Chemical Industries, NMU, JALGAON, 15 March, 2008
34. Nano-metals, Nano-Technology 10⁻⁹: a workshop organized by MIT, Pune 4 April, 2008.
35. Bottom-up Approach to Quantum Dots, 2nd Hu-CARE2008, an International Conference, Hanbat, University, Daejeon, South Korea, Dec 4-5, 2008
36. Processing of nano-metal-polymer composites, 1st International conference on nanostructured materials and nanocomposites (ICNM-2009) April 6-8, 2009, Institute of Macromolecular Science and Engineering (IMSE), MG University, Kottayam, Kerala, India, 686028 (not attended)
37. Bottom-up Approach to metal nanoparticles, SKKU SAINT, Suwan, S.Korea, May 7, 2009
38. Bottom-up approach to metal nanoparticles and their application in biology, Pai-Chai University, Daejeon, S.Korea, May 22, 2009
39. Bottom-up Approach to Quantum Dots, Ewha Womens University, Seoul, South Korea, Sept 10, 2009
40. Bottom-up Approach to Nanomaterials, Shogang University, Seoul, South Korea, August 24, 2009

41. Green Synthesis and Applications of Semiconductor Quantum Dots (QDs) and Magic Sized Nano Crystals (MSNCs): Indo-Russian Workshop on Nanotechnology, IRNANO-2009, National Physical laboratory, New Delhi, Nov. 16-17, 2009
42. Semiconductor Quantum Dots (QDs) and Magic Sized Nano Crystals (MSNCs): A Green Approach, Disha Institute of Management and Technology, December 20, 2009
43. Nanoparticles in polymer matrices, Second Conference on, Recent Advances in Polymer Technology, December 28-29, 2009, NMU, Jalgaon, MH
- 44. Synthesis of Metal Nano-particles and Semiconductor Quantum Dots: Nanotechnology via Solution Chemistry, MRSI-AGM Medal Lecture award, Feb 9-11, Ballabh Vidyanagar, Gujrat**
45. Chemically tailored Synthesis of nano-particles and Quantum dots, Department of Chemistry, University of Mumbai, UDCT, National Conference on Synthesis and application of novel materials (NCSANM-2010), March 4-5, 2010.
46. Chemical Synthesis of Metal nano-particles and Quantum dots, National seminar on advanced materials (NSAM-2010) Organized by Dept Physics, Shivaji University, Kolhapur-416 004, Maharashtra (India)
47. Processing of CdSe quantum dots and magic-size nano-crystals by chemical methods by Pawan K. Khanna Invited lecture at International Symposium on "Semiconductor Materials and Devices" (ISSMD-2011)", The M. S. University of Baroda, Vadodara, during January 28 - 30, 2011.
48. Solution Chemistry and Nanotechnology, Invited short lecture at International Symposium on Materials Education (ISME), organized by IISER, NCL, C-MET and DIAT, Pune during 26-28 March, 2011.
49. MITCOE, Pune Foundation day lecture as a chief guest 'Bridging the gap between the private and govt. education insititutes' on Dec. 15th. 2011
50. Synthesis and applications of nanomaterials for defence applications at seminar on Synthesis and Applications of Functional Materials, Department of Physics, National Defence Academy, Pune, Sept. 23, 2011
51. Polymer /Inorganic Nano-composites for defence applications by P. K. Khanna National Conf. on Polymer Science and Nanotechnology, MSU Baroda, 16-17 December 2011
52. Nano-CdSe: Quantum dots Vs Magic size nano – crystals by PK khanna, National Workshop on Nanoscience and Nanotechnology, held at MIT College of Engg., Pune, 6-7 Janaury, 2012
53. Nano-composites for defence: Synthesis and applications by P. K. Khanna at FNE-2010-an Indo-Japan meeting on energy materials to be held at Sharda Univeristy, Noida, India, January, 9-11, 2012
54. QDs for white light emission, Int Conf., FANEM 2012, State University of Belarus, Minsk, May 22-25, 2012
55. Quantum dots and their potential application, NANOCON12, Pune, October, 18-19, 2012
56. Nanomaterials for defence applications, PolyTech – 2012: International Conference on Advances in Polymeric Materials and Nanotechnology, NCL, Pune, December 15-17, 2012
57. Quantum Dots : Synthesis and Applications" in National conference on Nanomaterial application and properties" organized by Department of Physics, Arts, Commerce and Science college, Sonai, Ahmednagar, 22 – 23rd Feb, 2013.
58. Quantum dots: Challenges in Synthesis for Photonics at International Conference on Nanoelectronics & Nanodevices, Saveetha University, Chennai, 21-22nd January, 2013.
59. Quantum dots: Chemistry, Materials and Nanotechnology at International Conference on Chemistry and Materials:Prospects and Prospectives-2012, B.R. Ambedkar Central University, Lucknow,14-16 December, 2012
60. Chemistry and applications of Selenadiazoles "Coalescence of Chemical Sciences to Confront the Future Challenges" organized by Royal Society of Chemistry, UK, Western India Chapter, S P College, Pune, February 9-10, 2013.
61. Tailored Semiconductor Quantum dots and magic-size nanocrystals at MAM-12, Coimbatore, Nov.22-23, 2012
62. Quantum dots: Challenges in Synthesis for Photonics at International Conference on Nanoelectronics & Nanodevices during 21-22 January 2013 at Saveetha University, Chennai, India
63. bharti vidyapeeth 2014 nanocon
64. pandharpur 2015
65. Mathura 2015
66. Agra 2015
67. jaipur 2016
68. Ajmer 2016
69. Kanpur 2016