

### 3. Evaluative Report of the Chemistry Department June 2009 to July 2013

1. Name of the Department: **Department of Chemistry**
2. Year of establishment: **1960 (at Chandigarh)**
3. Is the Department part of a School/Faculty of the university?  
Faculty of the university
4. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.)  
  
Programme offered UG, PG and Ph.D.
5. Interdisciplinary programmes and departments involved:  
B.Sc.(H.S.) Subsidiary for Physics, Geology, Botany, Zoology, Anthropology, Biotechnology, Biochemistry, Biophysics and Microbiology science departments
6. Courses in collaboration with other universities, industries, foreign institutions, etc.  
N/A
7. Details of programmes discontinued, if any, with reasons : N/A
8. Examination System: Annual/Semester/Trimester/Choice Based Credit System  
Semester System at UG level, [B.Sc.(H.S.)]  
Choice Based Credit system at PG Level, [M.Sc.(H.S.)]
9. Participation of the department in the courses offered by other departments: N/A
10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others)

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	11	4	4 (CAS)
Associate Professors	12	-	
Assistant Professors	23	12	
Others: UGC Research Scientist	1	1	

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

Name	Qualification	Designation	Specialization	No of years of experience	No of Ph.D. Students guided for the last 4 years
Prof. S.K. Mehta	M.Sc. Ph.D	Chairman & Professor	Physical Chemistry	23 years	10
Prof. P. Venugopalan	M.Sc. Ph.D	Professor	Inorganic Chemistry	18 years	1
Prof. Alok Srivastava	M.Sc. Ph.D	Professor	Physical Chemistry	14 years	1
Prof. K.N. Singh	M.Sc. Ph.D	Professor	Organic Chemistry	14 years	
Dr. Gurjaspreet Singh	M.Sc. Ph.D	Assistant Professor	Inorganic Chemistry	11 years	
Dr. Ganga Ram Chaudhary	M.Sc. Ph.D	Assistant Professor	Physical Chemistry	9 years	
Dr. Amarjit Kaur	M.Sc. Ph.D	Assistant Professor	Organic Chemistry	8 years	
Dr. Sonal Singhal	M.Sc. Ph.D	Assistant Professor	Inorganic Chemistry	8 years	
Dr. Vikas	M.Sc. Ph.D	Assistant Professor	Physical Chemistry	8 years	
Dr. Neetu Gupta	M.Sc. Ph.D	Assistant Professor	Physical Chemistry	8 years	
Dr. Aman Bhalla	M.Sc. Ph.D	Assistant Professor	Organic Chemistry	2 years	

Dr. Navneet Kaur	M.Sc. Ph.D	Assistant Professor	Organic Chemistry	2 years	
Dr. Varinder Kaur	M.Sc. Ph.D	Assistant Professor	Inorganic Chemistry	2 years	
Dr. Shweta Rana	M.Sc. Ph.D	Assistant Professor	Physical Chemistry	2 years	
Dr. Rohit Kumar Sharma	M.Sc. Ph.D	Assistant Professor	Organic Chemistry	2 years	
Dr. Ramesh Kataria	M.Sc. Ph.D	Assistant Professor	Inorganic Chemistry	1 year	
Dr. J.S. Brar	M.Sc. Ph.D	UGC Research Scientist	Organic Chemistry	25 years	2
Prof. Pratibha Kapoor	M.Sc. Ph.D	Re-employed Professor	Inorganic Chemistry	33 years	2
Prof. Neelam Seedher	M.Sc. Ph.D	Re-employed Professor	Physical Chemistry	35 years	2

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors

Visiting Faculty	Dates of visit
Prof. Michael Gradzieiski Stranski-Laboratorium fur Physikalische und Theoretische Chemie, Institut fur Chemie, Technische Universitat Berlin, Germany	27.5.2010 to 8.6.2010
Dr. Hiroki Matsubara & Dr. Yosuke Imai, Kyushu University, Fukuoka (Japan)	14.10.2011-20.10.2011
Prof. G.H.Findenegg	1.2.2011-25.2.2011

Deptt. of Chemistry, Technical University Berlin, Germany	
Dr. Alexander Stadler, Anton Paar GmbH, Austria	30.08.2011
Prof. Goverdhan Mehta, National Research Professor, School of Chemistry, University of Hyderabad, Hyderabad	1.11.2011-5.11.2011
Dr. Krishan Lal, INSA Sr. Scientist & Former Director, National Physical laboratory, New Delhi	13.12.2011-14.12.2011

### Emeritus Professors

1. Professor S.V. Kessar
2. Professor D.V.S. Jain
3. Professor Gurdev Singh
4. Professor D.S. Gill

13. Percentage of classes taken by temporary faculty – programme-wise information: ~1%

14. Programme-wise Student Teacher Ratio

Session	B.Sc.(HS)	M.Sc.(HS)
2009-2010	07	04
2010-2011	08	04
2011-2012	07	04
2012-2013	05	04

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual

	Sanctioned	Filled	Actual
Technical staff	41	19	19
Administrative staff	20	20	20

16. Research thrust areas as recognized by major funding agencies
- (i) Inorganic /Organometallic Chemistry and its Applications to Nanotechnology
  - (ii) Synthetic Organic and Green chemistry
  - (iii) Colloidal, Biophysical Theoretical Chemistry

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.

(a) National grant Rs. Rs.2,50,73,883/- (b) International grant Nil

Details given below

### ANNEXURE III

Sponsor	Title	Funds Sanctioned	Duration	Principal Investigator and Research Team
CSIR	Niosomes as a potential carrier for controlled release of labile and poorly-soluble drugs	Rs. 16,00,000/-	1.10.2012-31.9.2015	Prof. S. K. Mehta
CSIR	Synthesis and Characterization of Boron Nitride Nano Tubes with different morphology and Sizes	Rs. 11,81,583/-	20.07.2011-19.07.2014	Dr. Sonal Singhal
CSIR	Development of new molecularly imprinted polymers for monitoring various xenoestrogens	Rs. 7,32,000/-	01-10-2012 - 30-09-2015	Dr. Varinder Kaur

UGC	Formulations, structural and interactional behavior of nanoemulsions and stabilization of biomolecules in nanoemulsions	Rs. 11,57,000/-	1.07.2012-30.06.2015	Prof. S. K. Mehta
UGC	Thermophysical and Spectroscopic Properties of Aqueous/Non-aqueous mixtures of Ionic Liquids	Rs. 7,80,500/-	01.02.2011-31.01.2014	Dr. Ganga Ram Chaudhary
UGC	Theoretical studies of structural and electronic properties of doped single walled BN nanotubes Mobilized	Rs. 6,37,000/-	2012-2015	Dr. Neetu Gupta
UGC	To explore the role of electron-correlation in the quantum-mechanical descriptors of quantitative structure-activity relationships	Rs. 5,74,000/-	01.04.2013-30.3.2016	Dr. Vikas
UGC	Effect of Nitrogen Ligands on copper (II) Aryl carboxylates and	Rs. 7,61,800/-	05.07.2011-04.01.2015	Prof. Raj Pal Sharma and Prof. P.Venugopalan

	sulfonates			
UGC-BSR Start-up grant	Synthesis and biological evaluation of novel tripeptides based on Trp-His and His-Arg classes of antimicrobial peptides	Rs. 6,00,000/-	30.10. 2012- 29.10. 2014	Dr. Rohit Kumar Sharma
UGC-BSR Start-up grant	Studies on transition metal/metal oxide nanoparticles synthesized via chemical routes for various applications	Rs. 6,00,000/-	30.10. 2012 - 29.10. 2014	Dr. Shweta Rana
UGC-BSR Start-up grant	Anthracene Polymers for molecular sensing	Rs. 6,00,000/-	30.10. 2012 - 29.10. 2014	Dr. Navneet Kaur
UGC-BSR Start-up grant	Application of silatranes for the development of catalytic surfaces	Rs. 6,00,000/-	30.10. 2012 - 29.10. 2014	Dr. Varinder kaur
UGC-BSR Start up grant	Ässimilation and stabilization of organochalcogenides in microemulsion media	Rs 6,00,000/-	01.04.2013 – 31.03.2015	Dr. Khushwinder Kaur
DST/SERB	Fluorescent molecular probes	Rs. 27,00,000/-	11.05. 2012- 11.05.2015	Dr. Navneet Kaur

	based on 1,10-phenanthroline-metal complexes			
DST/SERB	Synthesis and characterization of metal oxide nanoparticles and its utility for the removal of water contaminants	Rs. 12,00,000/-	01.11. 2013 - 01.10.2015	Dr. G.R.Chaudhry
DST	Fabrication of nanoemulsions for efficient delivery of food components	Rs. 35,00,000/-	01.03.2012 - 29.02.2017	Dr. Khushwinder Kaur
DST	Magnetic Properties of nano size Ferrites with different morphologies and sizes	Rs. 18,00,000/-	01.07. 2013- 01.06. 2016	Dr. Sonal Singhal

18. Inter-institutional collaborative projects and associated grants received

- a) National collaboration N/A  
b) International collaboration

**Indo-German project (2008-2010) between Prof. S.K.Mehta and Prof. M. Grazieliski, TU Berlin, Berlin Germany Amount= Rs. 3,97,950/-**

**Indo-Japan Project (30.5.2011-29.5.2013) Prof. S.K.Mehta and Prof. Makoto Aratono, Kyushu University, Fukuka,Japan Amount= Rs.3,50,000/-**

19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.;
- DST FIST grant allocated Rs. 142.50 lakhs (received only Rs. 78 lakhs)  
UGC CAS grant allocated Rs. 100.00 lakhs  
Purse grant Rs. 54,55005.00
20. Research facility / centre with



State recognition

National recognition ✓

International recognition

21. Special research laboratories sponsored by / created by industry or corporate bodies :

22. Publications:

- Number of papers published in peer reviewed journals (national / international) - **289**

- **Monographs**

R. C. Paul, **K. K. Bhasin**, R. S. Battu, *Fluorine Chemistry: An Introduction* New Age International: 2009; p 290.

- **Chapters in Books, Edited books, Books with ISBN with details of publishers:**

**S.K. Mehta**, G. Kaur, K.K. Bhasin and N. Mehta, Microemulsion systems as drug delivery vehicles: Recent developments, review article for book series entitled *Current Focus on Colloids and Surfaces*, (2009), publisher, Research Signpost

**S.K. Mehta**, S. Sharma, N. Mehta and S.S. Cameotra, Biomimetic Amphiphiles: Properties and Application Potential, Chapter no. 8 for book entitled 'Biosurfactants', (2010), publisher, Landes bioscience.

S.Cameotra, R.S. Makkar, J. Kaur and **S.K. Mehta**, Synthesis of Biosurfactants and Their Advantages to Microorganisms and Mankind, Chapter no. 20 for book entitled 'Biosurfactants', (2010), publisher, Landes bioscience

**S.K. Mehta** and Gurpreet Kaur, Book Chapter "Microemulsions: Thermodynamic and Dynamic Properties" for book entitled 'Thermodynamics' (2011), publisher InTech (ISBN: 978-953-307-544-0)

**S.K. Mehta** and Gurpreet Kaur, Book entitled "Entrapment of Anti-Tb Drugs in microemulsion assemblies" (2010), publisher LAP LAMBERT Academic publishing GmbH and Co. KG (ISBN: 978-3-8433-8719-4)

**S.K. Mehta** and Savita Chaudhary, Book entitled "Self assemblies of surfactants as solubilization reservoirs" (2010), publisher LAP LAMBERT Academic publishing GmbH and Co. KG (ISBN: 978-3-8433-5742-5)

**S.K. Mehta** and K. Kaur, Book entitled "Influence of additives on microstructure of reverse micelles", (2011), publisher LAP LAMBERT Academic publishing GmbH and Co. KG (ISBN: 978-3-8433-9162-7)

**S.K. Mehta**, Savita Chaudhary, Sanjay Kumar, Book Chapter "Nucleation and Growth of surfactant passivated semiconducting nanoparticles: Time dependent absorption and

luminescence profiles, for book entitled Encyclopedia of Semiconductor Nanotechnology (accepted 2012), publisher American Scientific.

Role of Metallic Nanoparticles in targeted drug delivery systems. Savita Chaudhary, Shikha Lohan and **S.K. Mehta**. In Recent Developments in Biotechnology, (accepted 2013) published by Studium Press LLC, USA

**Alok Srivastava** and Ipsita Roy: Bio-Nano-Geo Sciences: The Future Challenge, Ane Books, New Delhi (2009)

S. S. Bari, **Aman Bhalla**, Spirocyclic  $\beta$ -Lactams: Synthesis and Biological Evaluation of Novel Heterocycles. Topics in Heterocyclic Chemistry, Springer, Berlin, Germany, 2010 (Chapter 2, In Press)

**D.S. Gill**, My long journey to International Fame LULU Publishers USA (2011) ISBN 978-1-257-01390-6; August 2011;

Metallacalixarenes: Organo-Inorganic Hybrid Molecular Architectures, S. Kumar, **Navneet Kaur**, Singh, Adv. in Heterocyclic Chem. 2008, 96, 123-173, Elsevier: Academic Press, (ISBN: 978-0-12-374433-3)

Charged Guest Stimulated Photo-Responsive Supramolecular Chemosensors", S. Kumar, **Navneet Kaur**, ISBN 978-3-639-37351-6, LAP Lambert Academic Publishing AG & Co. KG, Germany. 2011

"Role of Non-Covalent Interactions in Formation of Super-Structures", **Navneet Kaur**, ISBN 978-3-8465-0476-5, LAP Lambert Academic Publishing AG & Co. KG, Germany. 2011

"Engineering Chemistry", M. Bali, **Navneet Kaur**, P.S. Dhillon, ISBN 978-81-909167-1-4, Salaria Publishing House, Jalandhar. 2011

"Environmental Science", **Navneet Kaur**, ISBN 978-81-922094-7-0, PBS Education, Jalandhar. 2012

Ashok Kumar Malik, **Varinder Kaur**, Sumati Kumar, Metal speciation (A book chapter), Chemical analysis of food: Techniques and applications, Publisher: Academic Press (2012), 715-755.

**K. K. Bhasin**, *Inorganic chemistry (B.Sc. III nd year of Indian Universities)*. 2nd ed.; Pradeep Publication: Jalandhar, 2010.

**K. K. Bhasin**, *Inorganic chemistry (B.Sc. IInd year of Indian Universities)*. 3rd ed.; Pradeep Publications: Jalandhar, 2009.

- Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.) : all publications
  - Citation Index – range / average

- SNIP
- SJR
- Impact Factor – range / average = 0-22
- h-index =22

23. Details of patents and income generated

Kang, Sung Kyu; Lee Yuseong-gu; Ryu Jae; Sung, Hur Seung and **Bhasin K. K.**, Chitosan NIPAM thermosensitivepolymer coagulant and method of preparation thereof **WIPO Patent Application WO/2010/074358 dated July 01, 2010.**

Renu Chadha, Anupam Saini, Poonam Arora, **D.V.S. Jain and P. Venugopalan.** Multi-component crystalline form of Oxcarbazepine. **Patent application no. 833/DEL/2012 filed in Indian Patent Office on 21.3. 2012.** (Filed in Indian Patent Office through TIFAC, DST, New Delhi).

24. Areas of consultancy and income generated

T. V. Singh “Synthesis of Elymoclavine” for Chemical Resources, SCO 76, Ist Floor, Swastic Vihar, Mansa Devi Complex, Panchkula, Haryana for Rs.60,000- .

T. V. Singh “Synthesis of Q10” for M/S Cephane Milk Specialities Ltd, Village Bhagwas, 6 K.M. Stone, Dera Bassi-Balwara road, Dera bassi, Distt. Mohali, Pb. For Rs. 1, 00,000/-.

25. Faculty selected nationally / internationally to visit other laboratories / institutions industries in India and abroad

Prof. S. K. Mehta, Germany and Japan  
 Prof. Alok Srivastava, Germany  
 Prof. K.K. Bhasin, Germany and Russia

26. Faculty serving in

- a) National committees b) International committees c) Editorial Boards d) any other (please specify)

**Prof. S.K. Mehta**

Nominated member DST PAC in Physical Chemistry 2012-2015

Nominated Member Subject Expert Committee on Chemical Sciences in DST FIST Programme 2013-2016

Nominated member UGC Travel Grant Committee 2013

Nominated member of UGC Advisory Committee, School of Sciences Gujarat University Ahmedabad-380009 INDIA 2013-2018

International Editorial Board Member, **Materials Focus**, American Scientific Publishers

International Editorial Board Member, **Journal of Nanoengineering and Nanomanufacturing**, American Scientific Publishers

**Prof. Venugopalan**

Member of UGC-Advisory committee of UGC, Govt. of India for UGC-DRS program (2013-2018) of S.V. University, Tirupati,

**Prof. Alok Srivastava**

Nominated member of Organizing Committee of NUCAR-2013 (Department of Atomic Energy) held in Jabalpur in Feb 2013.

Appointed as member of National Organizing Committee of International Nuclear Analytical Chemistry Conference sponsored by IAEA (United Nations), Department of Atomic Energy and Indian Association of Nuclear Chemists and Applied Scientists

Elected as Fellow of Indian Chemical Society (ICS) the oldest Chemical Society of India in 2012

Nominated on the Editorial Board of International Journal of Chemistry in 2012

Nominated Member of the Indo-German Alumni Network to promote Scientific Research between India and Germany in 2012

Elected to the Executive Board of Indian Association of Nuclear Chemists and Allied Scientists for three years (1.1.2012 to 31.12.2014)

Nominated Member of the Indo-German Commission of Deutsche Akademischer Austausch Dienst (DAAD) in 2011

Co-Convener of Humboldt Kolleg for promoting science amongst SAARC Country Scientists held in Kathmandu Nov 2010

Nominated as Founder Member of the Executive Council of the First Autonomous College of Uttarakhand May 2010 to May 2012

Nominated to the Apex Committee constituted by Haryana Government to monitor the implementation of Sarvashiksha Abhiyan Program of the Government of India w.e.f. July 2010 to 2012

Nominated as Member of the International Organizing Committee of the Fourth International Conference on Nuclear Analytical Techniques held in Bhabha Atomic Research Centre, Mumbai from 15<sup>th</sup> to 19<sup>th</sup> November 2010

Serving as member in National/International committees related to UGC/CSIR, Deptt. of Atomic Energy/Alexander von Humboldt Foundation Germany/Deutscher Akademischer Austausch Dienst

**Prof.K.K.Bhasin**

Member IUPAC Committee, INSA 2007-09

Elected FNASc; Fellow National Academy of Sciences (NASI) Allahabad 2010

Nominated by the National Academy of Sciences, INSA New Delhi as the official Indian representative to attend the General Assembly meeting of the International Union of Pure and Applied Chemistry, IUPAC at Puerto Rico (USA) from Aug 2-4, 2011 on the commemoration of 2011 as the INTERNATIONAL YEAR OF CHEMISTRY.

28. Student projects

- percentage of students who have done in-house projects including inter-departmental projects : 100% all M.Sc.(H.S.) students
- percentage of students doing projects in collaboration with other universities / industry / institute **N/A**

29. Awards / recognitions received at the national and international level by  
Faculty

**Prof. S.K. Mehta**

1. DAAD Honorary Advisor (2006-2009)
2. CRSI Bronze medal 2012

**Prof. Alok Srivastava**

1. Vice-President of Indian Association of Nuclear Chemists and Allied Scientist (IANCAS)
2. DAAD Professor and Consultant European Community
3. Fellow of Alexander von Humboldt Foundation (FAvH)
4. Allied Scientists (IANCAS)

**Prof. K.K.Bhasin**

1. Exchange Programme Indo Russian Project for two years between Panjab University and Irkutsk University Russia from 2010 to 2012.

Doctoral / post doctoral fellows

**Dr. Khushwinder Kaur**

Recruited Inspire Faculty by DST-INSA 2011.

**Dr. Jyoti Agarwal**

Recruited Inspire Faculty by DST-INSA 2013.

Students

**Number of post-graduate students getting financial assistance from the university.**

<b>Sr. No.</b>	<b>Session</b>	<b>Financial Assistance</b>
<b>2009-2010</b>		
1.	Late Sh. Pritam Nath and Ram Pyari Scholarship	2
2.	Deptt. of Alumni Relations awards scholarship	1
3.	Durga Devi Ram Dass Merit Scholarship	5
4.	Late Sh. Sampuran Mahant and Smt. Lila Mahant Memorial	2
5.	State Merit Scheme Scholarship	1
6.	Financial assistance to SC/ST students	3
7.	Surendra Nath Gold medal scholarship	2
	<b>Total</b>	<b>16</b>
<b>2010-2011</b>		
1.	UGC scholarship for University Rank Holder	1
2.	Post Metric scholarship	1
3.	Punjab State Merit Scholarship	5
4.	Sports Scholarship	3
5.	Financial assistance to SC/ST students	4
6.	Durga Devi Ram Dass Merit Scholarship	2
	<b>Total</b>	<b>16</b>
<b>2011-12</b>		
1.	Need-cum-Merit based scholarship	3
2.	Student Aid Fund scholarship	2

3.	Financial assistance to SC/ST students	3
4.	Sports Scholarship	2
5.	Durga Devi Ram Dass Merit Scholarship	2
6.	CET merit based scholarship	1
7.	State Merit Riot scholarship	1
8.	Award of Labhu Ram Scholarship	1
	<b>Total</b>	<b>15</b>
<b>2012-13</b>		
1.	Financial assistance to SC/ST students	1
2.	Special Endowment Trust Fund scholarship	1
3.	Award of Labhu Ram Scholarship	1
4.	Award of B.R. Puri scholarship	1
5.	D.V.S. Jain merit scholarship	1
6.	Durga Devi Ram Dass Merit Scholarship	4
	<b>Total</b>	<b>9</b>

30. Seminars/ Conferences/Workshops organized and the source of funding (national / International) with details of outstanding participants, if any.

Funding agencies are UGC/DST/CSIR/DAE. For other detail See **below**:

CONFERENCES organised by the deptt.

Title of the Seminar Conference/ Symposia	Place Date(s)	Name of the Convener	Names of Outstanding participants
13 <sup>th</sup> Punjab Science Congress	Panjab University Chandigarh. February 7-9, 2010	Prof. Paramjit Singh	

Professor R.C. Paul VIth National Annual Symposium on “Emerging Areas in Chemistry	Chemistry Department Panjab University Chandigarh. March 5-6, 2010	Prof. S.K. Mehta, Convener	
CHASCON-2010 4th Chandigarh Science Congress, theme: “Energy Security and Environmental Challenges”	Chemistry Department Panjab University Chandigarh. March 12-13, 2010	Prof. Paramjit Singh Sectional President	
29 <sup>th</sup> Annual Conference of Chemists	Chemistry Department Panjab University Chandigarh. December 19-21, 2010	Prof Paramjit Singh Convener Prof. S.K. Mehta, Sectional Secretary	
Professor R.C. Paul International Conference on “Emerging Trends in Chemistry”	Chemistry Department PU Chandigarh, February 11-12, 2011	Prof. S.K. Mehta Convener	<p>Prof. G. H. Findenegg, Deptt. of Chemistry, Technical University Berlin, Germany;</p> <p>Prof. Ashok Kumar Mishra Deptt. of Chemistry, Indian Institute of Technology Madras, Chennai</p> <p>Prof. P. Bhyrappa, Deptt. of Chemistry, Indian Institute of Technology Madras, Chennai</p> <p>Prof. S. K. Srivastava, Analytical Chemistry Division, Central Institute of Medicinal and Aromatic Plants, Lucknow</p> <p>Prof. Ravi Shankar, Deptt. of Chemistry Indian Institute of</p>



			<p>Technology, Hauz Khas, New Delhi</p> <p>Prof. Anil Kumar Physical and Materials Chemistry Division, National Chemical Laboratory, Pune</p> <p>Prof. Hardev Singh Virk, Nanotechnology Laboratory, DAV Institute of Engineering and Technology, Kabir Nagar, Jalandhar</p> <p>Prof. T. H. Goswami, Electronics and Smart Materials Division, Defence Materials and Stores Research and Development Establishment, Kanpur</p> <p>Prof. Ahmad Umar Advanced Materials and Nano-Engineering Laboratory Najran University, Saudi Arabia</p>
CHASCON-2011 5th Chandigarh Science Congress, theme: "Building gateways to sustainable Green communities"	Panjab University, Chandigarh, February 26-28, 2011	<p>Prof. S.K. Mehta, Sectional President</p> <p>Dr. Ganga Ram Chaudhary Secretary</p>	
International Conference on Innovations in Chemistry for Sustainable Development	Chemistry Department Panjab University Chandigarh. December 1-3, 2011	<p>Prof. S.K. Mehta Convener</p> <p>Dr.G.R.Chaudhary, Secretary</p>	<p>Dr. D.K. Tuli, GM, IOCL</p> <p>Prof. K.K.Bhutani, Director, NIPER, Mohali</p> <p>Prof J. P. Mittal MN SAHA FELLOW, BARC</p>

			<p>Prof. Om Prakash, Director Biomolecular NMR Facility, Kansas State University, Manhattan</p> <p>Prof. N. Sathyamurthy, Director, IISER, Mohali</p> <p>Dr. Anil Kumar, Chairman, Physical &amp; Materials Chemistry Division, NCL Pune</p> <p>Dr. Pannuru Venkatesu, University of Delhi, Delhi</p> <p>Dr. T. H. Goswami, Scientist-E &amp; HOD, DRDO</p> <p>Prof. Rakesh Mahajan, Dean Science, GNDU, Amritsar</p> <p>Dr. Pawan K. Sharma, KU, Kurukshetra</p> <p>Ms Gitanjali Rai, NCL Pune</p> <p>Dr. Suresh Walia, IARI, New Delhi</p> <p>Dr R H Duncan Lyngdoh, NEHU, Shillong</p>
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			<p>Dr. Zeba N. Siddiqui, AMU, Aligarh</p> <p>Dr. Harjinder Kaur, Gujarat University, Ahmedabad</p> <p>Prof. Achille De battisti, Ferrara, Italy</p> <p>Prof. Riccardo Ruffo, Milano, Italy</p> <p>Prof. Nerino Penazzi, Turin, Italy</p> <p>Prof. Claudio Fontanesi, Modena, Italy</p> <p>Prof R. Ornelas, Mezzano (RA), Italy</p> <p>S.Laxmi Gayatri, NIT, Silchar</p>
<p>Professor R.C. Paul National Symposium on “Frontiers in Chemical Sciences”</p>	<p>Chemistry Department Panjab University Chandigarh. February 24-25, 2012</p>	<p>Prof. S.K. Mehta Convener Prof Paramjit Singh Co-Convener Dr. G.R.Chaudhary Secretary</p>	<p>Prof. Mannar Maurya, IITR, Roorkee,</p> <p>Prof V. Haridas, IITD, Delhi,</p> <p>Prof Ashok Sharma, Deenbandhu University of Science &amp; Technology, Murthal,</p> <p>Dr. Madhvesh Pathak, VIT University,</p>

			<p>Dr. Avinash Bajaj, Regional Centre for Biotechnology Faridabad,</p> <p>Dr. Joseph S. Thrasher, Clemson University, USA,</p>
6 <sup>th</sup> Chandigarh Science congress “Synergy- Together Towards tomorrow”	Panjab University, Chandigarh, February 26-28, 2012	Prof. S.K. Mehta Sectional President	
National Symposium on Recent Advances in Chemical Sciences	Department of Chemistry, PU Chandigarh, Sept.20, 2012	Prof. S.K. Mehta Convener	<p>Prof. T.K.Chandrashekar, National Institute of Science Education &amp; Research(NISER) Bhubaneswar, Odisha</p> <p>Dr. Ganesh Pandey, Division of Organic Chemistry, NCL, Pune</p>
Professor R.C. Paul National Symposium on “New Developments in Chemical Sciences”	Department of Chemistry, Panjab University, Chandigarh. February 23-24, 2013	Prof. S.K. Mehta Convener Dr. Sonal Singhal Secretary	<p>Prof. Ashok K. Prasad, University of Delhi, Delhi</p> <p>Dr. K.R.Justin Thomas, IIT, Roorkee</p> <p>Dr. (Mrs.) Farukh Arjmand, AMU, Aligarh</p> <p>Prof. R.K.Sharma, University of Delhi, Delhi</p>
7 <sup>th</sup> Chandigarh Science Congress	Department of Chemistry, Panjab	Prof. S.K. Mehta Sectional Secretary	

	University, Chandigarh. March 02, 2013		
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### **National Seminars/ workshops organized by the department 2009 to 2013**

Seminar on “My Wanderings in the Wonderland of Materials” by Professor S K.Joshi National Physical Laboratory, New Delhi (4<sup>th</sup> December 2009)

Professor O.P.Vig endowment lecture delivered by Prof. V.K. Singh , Director, IISER, Bhopal on April 21, 2010

Seminar on Atomic Scale Modelling Tool using Virtual Nanolab nanotechnology Tool) Dr. Raghav Pachaury, Gurgaon August 13, 2010

Refresher Course in Chemistry (September 04- 24, 2010)

Seminar on “Carbohydrate in Drug Discovery” Dr. Vinod Kumar Tiwari, Department Chemistry Banaras Hindu University, Varanasi November 9, 2010

Seminar on “Excursions in Electrochemistry” Prof. Ashok Vijn, Ex President, Academy of Science, Royal Society of Canada, Maitre-de-Recherche, Institute de Recherche de Hydro-Quebec(IREQ) , Varennes, Que., Canada December 16, 2010

Seminar on “Metal oxides nanostructures and their applications” Prof. Ahmad Umar, Department of Chemistry, Faculty of Science Advanced Materials and Nanoengineering Laboratory (AMNEL) Najran University, P.O. Box: 1988, Najran 11001, Saudi Arabia on November 30, 2010

Seminar on Chemistry in Restricted Spaces: Select Photodimerizations in Crystals and Aqueous solution Prof. V. Ramamurthy Professor and Chair of Chemistry, University of Miami, Senior Editor, American Chemical Society, Langmuir January 31, 2011

Seminar on Recent Developments in Atomic Absorption Spectroscopy Ms. Andrea Glomb, General manager, Analytik Jena, Germany July 14, 2011

Seminar on “ Modern Techniques for Microwave Assisted Synthetic/Organic Chemistry”Dr. Alexander Stadler, Anton Paar GmbH, Austria 30.8.2011

Seminar on “Structure Studies of Electric Double Layer of Organized Amphiphile films using total Reflection” Dr. Hiroki Matsubara, Deptt. of Chemistry, Kyushu University, Fukuoka, Japan on October 17, 2011

Seminar on “Chemistry for a Sustainable future: Serenadine a Great Legacy” by Prof. Goverdhan Mehta, National Research Professor, School of Chemistry, University of Hyderabad, Hyderabad (formerly Director, Indian Institute of Sciences and Professor, Department of Organic Chemistry, IISC) on November 2, 2011

Lecture given by Dr. Krishan Lal, INSA Sr. Scientist & Former Director, National Physical laboratory, New Delhi visited Chemistry Deptt. December 13-14, 2011

Seminar on “RSC Publishing: How to publish in high impact journals”. By Dr. Richard Kelly and Dr. Emma Wilson on 09.10.2012

Seminar on Studies on synergistic Interaction of short-Chain Phospholipids in their Adsorbed Films and Micelles using Surface Tension and Surface Dilational Viscoelasticity Measurements by Prof. Makoto Aratono, deptt. Of Chemistry, Kyushu University, Fukuoka, Japan on 30.10.2012.

Seminar on National Symposium on Recent Advances in Chemical Sciences 20.9.2012

Seminar on “Future of Chemistry” Baba Kartar Singh memorial Lecture delivered by Prof. A.S.Brar , VC, GNDU, Amritsar topic in 21<sup>st</sup> Century on 19.11.2012

Special Colloquium on “Spectrum of Creativity in science: Some Psycho-Social Factors” by Prof. Ashok Vijh Maitre-de-Recherche, Institut de Recherche d'Hydro-Québec (IREQ), 1800 Blvd. Lionel Boulet, Varennes, Que., CANADA .21 Jan., 2013

Seminar on “Structure Studies of Electric Double Layer of Organized Amphiphile films using total Reflection” by Dr. Hiroki Matsubara, Deptt. of Chemistry, Kyushu University, Fukuoka, Japan 19.2.2013

Seminar on “Functionalisation of the porphyrin periphery for photosynthesis and energy up-conversion studies” delivered by Professor Maxwell J. Crossley, FAA, FRACI Professor of Chemistry (Organic Chemistry) and University Professorial Fellow School of Chemistry, F11 The University of Sydney NSW 2006 Australia on 19.2.2013

Seminar on Bawa Kartar Singh memorial lecture and INSA Medal lecture at Chandigarh Science Congress Professor Ashutosh Sharma, Institute Chair Professor & INAE Chair Professor & C. V. Seshadri Chair Professor, Department of Chemical Engineering, Indian Institute of Technology, Kanpur delivered on the topic Nanofabrication beyond the Top-down and Bottom-up: Power of Self-organization on small Scales” on March 1, 2013.

DST-PAC Physical Chemistry meeting held in department of Chemistry (June 6-7, 2013)

Seminar on “Use and applications of FTIR” by Dr. Ashutosh Pathak, Regional Business Manager, Thermo Fisher Scientific, India Pvt. Ltd., on 3.7.2013.

31. Code of ethics for research followed by the departments :  
As per code of ethics framed by the university

**32. Student profile Programme-wise**

Session	Name of the Programme	Application Received	Selected		Pass %age	
			Male	Female	Male	Female
2009-2010	B.Sc(H.S) 1 <sup>st</sup> Year		5	47	60	70
	B.Sc(H.S)2 <sup>nd</sup> Year		5	39	40	56
	B.Sc(H.S) 3 <sup>rd</sup> Year		5	36	40	88
	M.Sc(H.S)1 <sup>st</sup> year	220	8	31	88	61
	M.Sc(H.S)2 <sup>nd</sup> Year		13	24	25	100
2010-2011	B.Sc(H.S) 1 <sup>st</sup> Year		14	44	64	82
	B.Sc(H.S)2 <sup>nd</sup> Year		5	45	40	58
	B.Sc(H.S) 3 <sup>rd</sup> Year		8	34	25	76
	M.Sc(H.S)1 <sup>st</sup> year	245	6	36	86	58
	M.Sc(H.S)2 <sup>nd</sup> Year		12	26	58	92
2011-2012	B.Sc(H.S) 1 <sup>st</sup> Year		5	49	60	80
	B.Sc(H.S)2 <sup>nd</sup> Year		12	44	50	75

	B.Sc(H.S) 3 <sup>rd</sup> Year		6	46	17	54
	M.Sc(H.S)1 <sup>st</sup> year	252	8	47	50	41
	M.Sc(H.S)2 <sup>nd</sup> Year		5	33	20	82
2012-2013	B.Sc(H.S) 1 <sup>st</sup> Year		6	46	50	61
	B.Sc(H.S)2 <sup>nd</sup> Year		4	47	75	57
	B.Sc(H.S) 3 <sup>rd</sup> Year		11	42	72	81
	M.Sc(H.S)1 <sup>st</sup> year	277	6	50	17	64
	M.Sc(H.S)2 <sup>nd</sup> Year		8	46	63	74

### **3. Diversity of Students**

<b>Session</b>	<b>Name of the programme</b>	<b>% of students from the same university</b>	<b>% of students from other universities within the State</b>	<b>% of students from universities outside the State</b>	<b>% of students from other countries</b>
2009-2010	B.Sc(H.S) 1 <sup>st</sup> Year		–		–
	B.Sc(H.S)2 <sup>nd</sup> Year		–		–
	B.Sc(H.S) 3 <sup>rd</sup> Year		–		–
	M.Sc(H.S)1 <sup>st</sup> year	92	–	8	–
	M.Sc(H.S)2 <sup>nd</sup> Year		–		–



2010-2011	B.Sc(H.S) 1 <sup>st</sup> Year		–		–
	B.Sc(H.S)2 <sup>nd</sup> Year		–		–
	B.Sc(H.S) 3 <sup>rd</sup> Year		–		–
	M.Sc(H.S)1 <sup>st</sup> year	91	–	9	–
	M.Sc(H.S)2 <sup>nd</sup> Year		–		–
2011-2012	B.Sc(H.S) 1 <sup>st</sup> Year		–		–
	B.Sc(H.S)2 <sup>nd</sup> Year		–		–
	B.Sc(H.S) 3 <sup>rd</sup> Year		–		–
	M.Sc(H.S)1 <sup>st</sup> year	87	–	13	–
	M.Sc(H.S)2 <sup>nd</sup> Year		–		–
2012-2013	B.Sc(H.S) 1 <sup>st</sup> Year		–		–
	B.Sc(H.S)2 <sup>nd</sup> Year		–		–
	B.Sc(H.S) 3 <sup>rd</sup> Year		–		–
	M.Sc(H.S)1 <sup>st</sup> year	90	–	10	–
	M.Sc(H.S)2 <sup>nd</sup> Year		–		–

**34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examination?**

Session	Category	Total
2009-2010	NET	11
	GATE	05
2010-2011	NET	06
2011-2012	NET	16
2012-2013	NET	10
	GATE	4

**35. Student Progression**

Student progression	Percentage against enrolled
UG to PG	68%
PG to M.Phil.	Nil
PG to Ph.D.	10.17%
Ph.D. to Post-Doctoral	Nil
<ul style="list-style-type: none"> <li>• Campus selection</li> <li>• Other than campus recruitment</li> </ul>	
Entrepreneurs	

### 36. Diversity of staff

Percentage of Faculty who are graduates	100%
Of the same university	62%
From other universities within the state	11%
From universities from other states	27%

Number of faculty who were awarded

M.Phil., Ph.D., D.Sc. and D.Litt. during

the assessment period N/A

37. Present details of departmental infrastructural facilities with regard to

a) Library

1. Department of chemistry has one of the largest collection of reference texts in its library in the entire region.

2. Central instrumentation lab (CIL) of the department has all the state-of-the-art instrumentation facility available under one roof.

b) Internet facilities for staff and students

c) Total number of class rooms: 6

d) Class rooms with ICT facility 5

e) Students' and Research laboratories 26

39. List of doctoral, post-doctoral students and Research Associates

#### **Post Doctoral students**

Ms. Varinder Kaur

Ms. Ruchi Badoni Semwal

Mr. Mohd. Khalid

Mr. Deepak Kumar Semwal

**Research Associates**

Dr. Savita Chaudhary

Dr. Khushwinder Kaur

**List of doctoral students**

2009-2010	2010-2011	<u>2011-2012</u>	<u>2012-2013</u>
Shilpee Dham	Savita Chaudhary	Rashmi Dhawan	Ekta Arora
Ms. Sukhbir Kaur	Ms. Sajeela Awasthi	Yogesh Nagpal	Mukesh Kumar Sharma
Ms. Pooja Agarwal	Shailja	Mamta	Ajnesh Singh
Mr. Dilbag Singh	Ashima Singh Km		Sanjay Kumar
Ms. Khushwinder Kaur	Raghubir Singh		Rishu
Ms. Gurpreet Kaur	Neeraj Kumar		Priya Duggal
	Nishima		Sunil Vats
	Harish		
	Rajeev Kumar		

- a) from the host institution/university
- b) from other institutions/universities

40. Number of post graduate students getting financial assistance from the university.

<b>Session</b>	<b>Financial Assistance</b>
2009-2010	<b>05</b>
2010-2011	<b>07</b>
2011-2012	<b>05</b>
2012-2013	<b>06</b>

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology. N/A

42. Does the department obtain feedback from

a. faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?

b. students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?

Taken and evaluated by individual teachers for respective subjects/courses

c. alumni and employers on the programmes offered and how does the department utilize the feedback?

43. List the distinguished alumni of the department (maximum 10)

Dr. Krishan Kant Paul	Governor of Meghalaya
Prof. Ashok Vijn	Ex President, Academy of Science, Royal Society of Canada, Maitre-de-Recherche, Institute de Recherche de Hydro-Quebec(IREQ) Varennes, Que., Canada
Mr. K.L. Matta	Director of Research, chairman of Chemistry, rosewell Park, Cancer Research Inst., Buffalo, New York
Mr. M.K.Jain	810 W Parr Ave Los Gaatos, CA 95032, USA
Prof. Ram Parkash	1634-35, Sector 13 Kurukshetra Member Rajya Sabha

Dr. Sanjay Trehan	President , PANACEA Biotech, Mohali
Mr. S.S.Bains, IAS	Managing Director, Punjab Alkalies Punjab, Chandigarh
Prof. D. V. S. Jain	1529/Pushpac Society, 49-B, Chandigarh
Prof. S. V. Kessar	635/11, Chandigarh
Prof. Gurdev Singh	House No. 21, Sector 9, Panchkula

44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts. **See annexure V**

45. List the teaching methods adopted by the faculty for different programmes.

**(a) Classroom teaching:** Besides conventional black-board teaching, ICT enabled methods are used for enhancement of learning both at graduate and post-graduate levels.

**(b) Practical:** The conventional laboratory experiments are automated through state-of-the-art instruments, wherever possible. The access to these is provided not only to the students at doctorate level but also at graduate and post-graduate levels. Central instrumentation lab (CIL) of the department has most of the state-of-the-art instrumentation facilities available under one roof.

**(c) Project work:** The students are involved in active research at the level of M.Sc. through a one-and-half year research project.

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

The department regularly looks after research monitoring through presentations made by the students before a research monitoring committee of the department. The department has a separate PG-APMEC and UG-APMEC, which monitors the academic programme and its evaluation at graduate and post-graduate levels. Besides these, academic, administrative and technical committees of the department are actively engaged in the fulfilment of various objectives related to the infrastructure and academic development of the department.

47. Highlight the participation of students and faculty in extension activities.

The chemistry department of the Panjab University has a highly active “Chemical Society” under which students along with the faculty members are actively engaged in various extension activities such as organisation of science quizzes, and various cultural events throughout the year.

Besides this, the department has its own old students association which regularly organises interaction meetings among students and faculty.

48. Give details of “beyond syllabus scholarly activities” of the department.

A graduate seminar is organised every alternate week at the department level, where research scholars present and discuss a topic of current research, before audience comprising of students and faculty. Besides this, the students at both graduate and post-graduate levels are actively involved in organisation of seminars/workshops at the department. The department also allows a few students of B.Sc. (Hons. School) and M.Sc. (Hons. School) to attend summer research programmes in other institutions such as IITs, IISc, and national research labs every year.

Moreover, all the faculty members are actively involved in research having a number of research projects under various agencies such as UGC, CSIR and DST.

49. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details.

The department of chemistry is a Centre of Advanced Studies (CAS) in Chemistry as accredited by the UGC, and is also accredited by DST under FIST programme.

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.

All the faculty members of the department are actively engaged in research on thrust areas of chemistry such as Organic and Inorganic Synthesis, Nanosciences, Micellar systems, Conducting Polymers, Molecular modeling, and Crystallography etc. Several faculty members from the department have research collaboration with actively engaged research groups in India and abroad, imparting new knowledge in the area of chemistry through innovative research.

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

**Strengths:**

- (i) The chemistry department has highly qualified faculty (all PhDs), which includes recipients of distinguished fellowships and awards such as Bhatnagar award.
- (ii) The students from the department of chemistry are well-placed in renowned national/international research laboratories, educational institutes, and industries.
- (iii) The department of chemistry has most of the state-of-the-art research facilities in the field of chemical sciences.
- (iv) The curriculum at both graduate and post-graduate levels is highly competitive and regularly updated to meet the demands in teaching and research.
- (v) All the faculty members are actively involved in research having a number of research projects under various agencies such as UGC, CSIR and DST.

**Weaknesses:**

- (i) The strength of the faculty in the department of chemistry has dwindled considerably during recent years.
- (ii) Though the strength of students has increased considerably, the infrastructure resources available are limited in the department.
- (iii) The strength of technical and non-teaching staff provided to the Department of Chemistry is also not enough to meet the ever-growing demands of the department.
- (iv) Many of the old research laboratories in the department need urgent upgradation.
- (v) The infrastructure facilities provided to most of the faculty members are sub-standard.

**Opportunities:**

- (i) **For international collaboration:** Considering expertise of the faculty, the department see enormous opportunity in extending collaborations with international institutes.
- (ii) **For industrial collaboration:** since all the faculty members are actively involved in high-level research, therefore, several opportunities lay in the utilization of research output for industrial applications.
- (iii) **In the area of teaching:** Enormous opportunities are available in teaching and learning if the expertise of faculty of the department is properly managed.



- (iv) **In the area of research:** The department has state-of-the-art research facilities which can be shared with national/international institutes.
- (v) **For collaboration with regional institutes:** The department of chemistry see tremendous opportunities for collaborating with the institutes in the region of Chandigarh to enhance teaching and research.

**Challenges:**

1. The task of upgradation of research laboratories of the department is most often overlooked by the university providing negligible funding, and it is left to the individual faculty members to generate funds.
2. To speed up the recruitment of new faculty is an uphill task.
3. The department is unable to retain many brilliant students produced at postgraduate level for the doctorate programme of the department.
4. Getting highly qualified technical staff for the research facilities available at the department is also a major challenge for the department.
5. The requirement for computerisation of administrative work has increased many folds during recent years, but generating funds for this is highly challenging.

52. Future plans of the department.

In the future, the department of chemistry will strive hard towards:

1. Enhancing the infrastructure for teaching and research in the department.
2. Increasing the international collaboration in research and development.
3. Active involvement of industrial participation in research, including that at the postgraduate level.