

## Curriculum Vitae



**Name** : Dr. Lok Pratap Singh  
**Designation** : Principal Scientist (Since April, 2012)  
**Father's Name** : (Late) Sri. B. S. Chauhan  
**Date of Birth** : 4<sup>th</sup> November 1969  
**Mailing Address** : **Dr. L. P. Singh**  
Scientist-In-Charge,  
Materials Evaluation Laboratory  
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**Academic Qualification**

- B. Sc. 1988, Meerut University, Meerut (Now CCS University)
- M.Sc. 1991, University of Roorkee (Now IIT Roorkee)
- Ph. D. 1996, University of Roorkee (Now IIT Roorkee)
- Post Doctoral Fellow, National Institute of Materials & Chemical Research, Tsukuba, JAPAN, 1997-2000.

**Employment Record**

- **Senior Research Fellow** by CSIR-India from July, 1994 - April, 1996
- **Research Associate** by CSIR-India from April, 1996 - Sept.1997
- **Centre of Excellence Fellow** at National Institute of Materials & Chemical Research, Tsukuba, JAPAN (Oct. 1997 - April 2000)
- **Scientist 'B'** at CSIR- CBRI, Roorkee (2000- 2004)
- **Scientist 'C'** at CSIR-CBRI, Roorkee (2004-2008)
- **Senior Scientist** at CSIR-CBRI, Roorkee (2008- 2012)
- **Principal Scientist** at CSIR-CBRI, Roorkee (2012- till date)

**Important Institutional Responsibilities**

- **Co-nodal Scientist** of 12<sup>th</sup> Five Year Plan Project (2012-17) of the institute (Rs. 11.00 Crore)
- **Coordinator** for the Upgradation of Instrumentation facilities (2010-2012) (Rs. 10.00 Crore)
- **Member** Academic Committee of CSIR-CBRI, Roorkee (2011-2013)
- **Technical member** of Institute Purchase Committee (2010- 2017)
- **Member Convener**- Paper Review Committee of CSIR-CBRI, Roorkee

**Awards**

- **First Khosla Research Award with Gold Medal** by University of Roorkee, Roorkee, India in 1996.
- **Khosla Research Award with Silver Medal** by University of Roorkee, Roorkee, India in 1996.
- **Raman Research Award** by CSIR, New Delhi for the year 2011-12
- **Outstanding Concrete Technologist Award** 2015 by Indian Concrete Institute(ICI) and UltraTech, Cement

## Field of Research

- **Cement/ Concrete:** early stage hydration, microstructure, durability, performance evaluation
- **Building Bricks:** clay Bricks, clay-flyash bricks, flyash bricks
- **Material Characterization** using Advanced Instrumentation Techniques such as electron microscopy, X-ray diffraction, TG/DTA, XRF, BET, NMR, FTIR, nano-indentation etc.
- **Nanotechnology:** size controlled and cost-effective preparation of nanomaterials using sol-gel, flame spray pyrolysis etc
- **Agro-Industrial Waste Management** such as copper tailing, industrial sludges, red mud, sponge iron waste, cobalt plant waste, rice husk ash, baggase ash etc
- **Flyash Utilization** in bricks, roads, cement etc.
- **Renewable Energy:** photovoltaic solar applications
- **Chemical sensors** for environmental pollutants

## Research Experience

- : **Twenty one** years research experience
- (a) Ph.D. Thesis supervised – **05**
  - (b) Ph.D. Thesis in progress – **05**
  - (c) M. Tech Dissertations: **06**
  - (d) M.Sc. Dissertation supervised **>25**

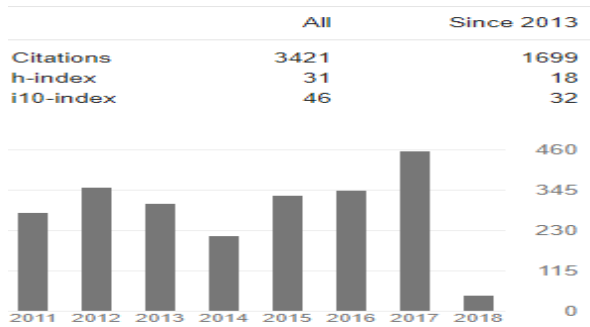
## Books & Book Chapters: 04, Invited chapters in books and encyclopedias

1. **Handbook of Chemistry of nano-modified cement** Lambert Academic Publishing, 2015
2. **Applications of Nanotechnology in Construction**, published by Studium Press LLC, USA. “Applications of nanotechnology in construction”, 9 (2013) 43-67
3. Chapter entitled “**Electrochemical Sensors for Liquid Environment**” *Chemical Sensors: Comprehensive Sensor Technologies*, Momentum Press, NY, USA, 5 (2011).
4. Chapter entitled “**Ion-Selective Electrodes for Sensing of Metal Cations**” in Encyclopedia of Sensors published by American Scientific Publishers, 5 (2006) 113-149.

## Patents: 03

1. “An improved process for the preparation of silica nanoparticles for applications in cement based materials”, **L.P. Singh**, S. Naik B, U. Sharma, D. Ali, **Indian Patent** (application Submitted)
2. **US Patent No. 6274806**, Aug 2001: entitled “Platinum complexes for use as sensitizer for semiconductor electrode of solar cell”, H. Sugihara, K. Hara, K. Sayama, H. Arakawa, A. Islam, **L.P. Singh**
3. **US Patent No 6278056**, Aug 2001: entitled “Metal complexes useful as sensitizer, Dye sensitized oxide semiconductor electrode and solar cells using the same”, H. Sugihara, , H. Arakawa, K. Sayama, **L. P. Singh**, M.K. Nazeeruddin, and M. Gratzel

**Research Papers/Reviews: 73 Papers in International Peer Reviewed Journals with high Impact Factors – 73);**  
**(Citations: More than 3484**  
***h* index : 30**  
**i10- index: 46**  
 (as on Mar. 2018)



**PUBLICATIONS:**

1. Studies on enhanced thermally stable high strength concrete incorporating silica nanoparticles, *Construction and Building Materials* 153, 506-513 (**I.F. 3.16**)  
 R. Kumar, S. Singh, **L.P. Singh**
2. An innovative approach to develop microporous activated carbons in oxidising atmosphere, *Journal of Cleaner Production* 156, (2017) 549-555 (**I.F. 5.71**)  
 Suhas, P.J.M Carrott, M.M.L.R. Carrott, R. Singh, **L.P. Singh**, M. Chaudhary
3. Quantification and characterization of CSH in silica nanoparticles incorporated cementitious system, *Cement and Concrete Composites* 79, (2017),106-116 (**I.F.= 4.26**)  
**L.P. Singh**, W. Zhu, T. Howind and U. Sharma
4. Lead (Pb<sup>2+</sup>) and copper (Cu<sup>2+</sup>) remediation from water using superparamagnetic maghemite (γ-Fe<sub>2</sub>O<sub>3</sub>) nanoparticles synthesized by Flame Spray Pyrolysis (FSP), *Journal of Colloid and Interface Science* 492,(2017), 176-190 (**I.F. = 4.23**)  
 S. Rajput, **L.P. Singh**, C.U. Pittman and D. Mohan
5. High strength sustainable concrete using silica nanoparticles, *Construction and Building Materials* 138, (2017,) 285-295 (**I.F. = 3.16**)  
 R. Palla, S.R. Karade, G. Mishra, U. Sharma, **L.P. Singh**
6. Studies on optimizations of silica nanoparticles dosage in cementitious material, *Cem. Concr. Compos.*, 70, (2016), 60-68 (**I.F.= 4.26**)  
**L.P. Singh**, D. Ali and U. Sharma
7. Studies on early stage hydration of tricalcium silicate incorporating silica nanoparticles: Part II, *Cons. & Build. Materials*, 102,(2016),943-949 (**I.F. = 3.16**)  
**L.P. Singh**, S. K. Bhattacharyya, S.P. Shah, G. Mishra and U. Sharma
8. Hydration Studies of cementitious material using silica nanoparticles, *J. Adv. Concr. Technol.*, 13, (2015), 345-354, (**I.F. = 0.93**)  
**L.P. Singh**, S. K. Bhattacharyya, A. Geol, U. Sharma and G. Mishra
9. Quantification of hydration products in cementitious material incorporating silica nanoparticles, *Frontiers of Structural and Civil Engineering*,(2015), 1-6 (**I.F. = 0.84**)  
**L.P. Singh**, S. K. Bhattacharyya, A. Goel and G. Mishra
10. Effect of morphology and dispersibility of silica nanoparticles on the mechanical behaviour of cement mortar; *Journal of Conc. Strc. and Mater*,9, (2015),207-217 (**I.F.= 1.35**)  
**L.P. Singh**, A. Goel, S. K. Bhattacharyya, U. Sharma, S. Ahalawat and G. Mishra
11. Studies on early stage hydration of tricalcium silicate incorporating silica nanoparticles Part I; *Cons. & Build. Materials*, 74, (2015), 278–286.(**I.F.= 3.16**)  
**L.P. Singh**, S.K. Bhattacharyya, S.P. Shah, G. Mishra, S. Ahalawat and U. Sharma

12. Improving the durability of cementitious materials using silica nanoparticle, *Nanotechnology in Construction*, (2011)  
**L.P. Singh**, A. Goel, S.K. Bhattacharyya, G. Mishra
13. Studies on Hydration of Tricalcium Silicate Incorporating Silica Nano-particles, *Nanotechnology in Construction*, 151-159  
**L.P. Singh**, S.K. Bhattacharyya, S.P. Shah, U. Sharma
14. Effect of silica nanoparticles on chloride permeability in cement mortars; *Adv. Cem Res*, 26(1), (2014), 1-10 (**I.F.= 0.92**)  
**L. P. Singh**, S. K. Bhattacharyya, S. Ahalawat and G. Mishra
15. Sol-Gel processing of silica nanoparticles and their applications, *Advances in Colloid and Interface Sci.*; 214 (2014), 17–37 (**I.F. = 7.48**)  
**L.P. Singh**, S.K. Bhattacharyya, S. Ahalawat, R. Kumar, G. Mishra, U. Sharma and G. Singh
16. Characterization of automobile effluent treatment plant sludge: Its utilization in construction materials, *Construction and Building Materials* 73, (2014), 603–609. (**I.F.= 3.16**)  
M. Garg , **L.P. Singh**, S. Maiti and A. Pundir
17. Cadmium (II) ion sensing through p-tert-butyl calix[6]arene based potentiometric sensor, *Journal of Molecular Liquids* 195, (2014), 65–68 (**I.F.= 3.64**)  
V.K. Gupta, S. Kumar, R. Singh, **L.P. Singh**, S.K. Shoorra and B. Sethi
18. Microstructure Improvement of Cementitious Systems using Nanomaterials: A Key for Enhancing the Durability of Concrete; *ASCE publications*, pp. 293-300, (doi: <http://dx.doi.org/10.1061/9780784413111.034>), (2013), (**I.F. = 0.98**)  
**L.P. Singh**, S.K. Bhattacharyya, U. Sharma, G. Mishra and S. Ahalawat
19. Beneficial role of nanosilica in cement based materials – A review, *Construction & Building Materials*, (2013), 47, 1069 (**I.F. = 3.16**)  
**L.P. Singh**, S.R. Karade, S.K. Bhattacharyya, M. Yusuf and S. Ahalawat
20. Effect of Admixture on the compressive strength of composite cement mortar, *Concrete Research Letters*, (2012), 3(4), 541  
V. Sood, **L.P. Singh**, A. Dwivedi and S.K. Agarwal
21. Reduction of calcium leaching in cement hydration process using nanomaterials, *Materials Technology*, (2012), 27(3) 233. (**I.F. = 1.27**)  
**L.P. Singh**, S. K. Bhattacharyya, G. Mishra and S. Ahalawat
22. A Novel copper (II)- PVC membrane potentiometric sensor based on Dimethyl 4,4' -(o-phenylene) bis (3- thioallophanate), *J. of Molecular Liquids*, 174 (2012), 11-16. (**I.F. = 3.64**)  
V. K. Gupta, **L.P. Singh**, N. Upadhyay, R. Singh and S.P. Kaur
23. Preparation of size controlled silica nano particles and its functional role in cementitious system, *Journal of Advanced Concrete Technology*, (2012), Vol. 10, 345-352. (**I.F.= 0.97**)  
**L.P. Singh**, S. K. Bhattacharyya and S. Ahalawat
24. Granulometric synthesis and characterisation of dispersed nanosilica powder and its application in cementitious system, *Advances in Applied Ceramics*, (2012), 111(4), 220. (**I.F. = 1.09**)  
**L.P. Singh**, S. K. Bhattacharyya, P. Singh and S. Ahalawat
25. Effect of blended fly ash on the compressive strength of cement paste, *Concrete Research Letters* Vol. 2(4) 2011  
S.K. Agarwal, **L.P. Singh**, V. Sood, G. Mishra and S. Ahalawat
26. Applications of Nanotechnology in Cement Based Materials, *Nano Digest*, CSIR Special Issue, 2011.  
**L.P. Singh**, S. K. Bhattacharyya and S. Ahalawat

27. Preparation of silica nanoparticles and its beneficial role in cementitious materials, *Nanomaterials and Nanotechnology*, 1, (2011), 44-51. **(I.F. = 0.93)**  
L.P. Singh, S. K. Agarwal, S. K. Bhattacharyya, U. Sharma and S. Ahalawat
28. Functional role of cationic surfactant to control the nano size of silica powder, *Applied Nanoscience*, 1, (2011), 117-122.  
L.P. Singh, S. K. Bhattacharyya, G. Mishra and S. Ahalawat
29. Anion recognition through Amide-based dendritic molecule: A PVC based sensor for nitrate ions, *Talanta* 85, (2011), 970-974. **(I.F. = 4.16)**  
V. K. Gupta, L.P. Singh, S. Kumar, R. Singh, S. Chandra and B. Sethi
30. Molybdate anion recognition through a cationic crowned ionopore based electrochemical sensor: Detection of an Environmental pollutant, *Inter. J. of Environ. Sci.* 1(6), (2011), 1361-1372. **(I.F. = 1.91)**  
S. Kumar, R. Singh, V. K. Gupta, L.P. Singh and B. Sethi
31. Functional role of cationic surfactant to control the nano size of silica powder, *Applied Nanoscience* 1 (3), 163-163  
L.P. Singh, S.K. Bhattacharyya, G. Mishra, S. Ahalawat
32. Iron(III) Selective Electrode Based on S-Methyl N-(methylcarbamoyloxy) thioacetimidate as a Sensing material, *Inter. J. of Electrochem. Sci.*, 6 (2011) 650. **(I.F. = 1.73)**  
V. K. Gupta, N. Upadhyay, S. Kumar, R. Singh, L.P. Singh and B. Sethi
33. Effect of the chemical composition at the memory behavior of Al/BST/SiO<sub>2</sub>/Si-gate-FET structure, *Applied Nanoscience* 1, 10  
L.P. Singh, S.K. Bhattacharyya, G. Mishra, S. Ahalawat
34. Crown ether-dendrimer based potentiometric Na<sup>+</sup> sensor electrode, *J. of Electroanal. Chem.* 651, (2011), 185–190. **(I.F. = 3.01)**  
S. Chandra, S. Kumar, R. Singh, L.P. Singh and B. Sethi
35. Pozzolanic activity of blended flyash; *Civil Engineering & Construction Review* (2009) 44.  
S.K. Agarwal and L.P. Singh
36. Use of High volume flyash in concrete for building sector, *Civil Engineering & Construction Review* 22, (2009), 72  
S.K. Agarwal, L.P. Singh, D. Juneja, I. Siddiquie and A. Kumar
37. A comparative study of Pb<sup>2+</sup> selective sensors based on derivatized tetrapyrazole and calix[4]arene receptors, *Electrochimica Acta*, 51, (2006), 2547, **(I.F. = 4.79)**  
A.K. Jain, V.K. Gupta, L.P. Singh and J.R. Raison
38. Utilization of Fly Ash as Secondary Resource Material for Brick Making in Maharashtra State, *Water and Energy Abstracts* 16 (1)  
JM Bhatnagar, V Kumar, RK Goel, L.P. Singh, J Singh
39. Selective anion recognition: Charged diazacrown ethers based highly selective sensors for chromate ions, *Anal Chim Acta*, 546, (2005), 199. **(I.F. = 4.95)**  
L.P. Singh, J.M. Bhatnagar, S. Tanaka, H. Tuse and M. Mori
40. A copper-selective electrode based on bis(acetylacetonate) propylenediimine, *Talanta*, 68, (2005), 193. **(I.F. = 4.16)**  
V.K. Gupta, R.N. Goyal, N. Bachheti, L.P. Singh and S. Agarwal.
41. Chelating ionophore based membrane sensor for copper (II) ions, *Talanta*, 66, (2005), 1355. **(I.F. = 4.16)**  
A.K. Jain, V.K. Gupta, L.P. Singh, P. Srivastave and J.R. Raison

42. Anion recognition through novel C-thiopenecalix[4]resorcinarene PVC based sensor for chromate ions, *Talanta*, 65, (2005), 716(**I.F. = 4.16**)  
A.K. Jain, V.K. Gupta, **L.P. Singh**, P. Srivastav and J.R. Raison
43. Copper(II) selective electrochemical sensor based on Schiff Base complexes, *Talanta*, 64, (2004), 313(**I.F. = 4.16**)  
**L.P. Singh** and J.M. Bhatnagar
44. Chelating ionophores based electrochemical sensor for Hg(II) ions, *J. Appl Electrochem*, 34, (2004), 391 (**I.F. = 3.25**)  
**L.P. Singh** and J.M. Bhatnagar
45. PVC based selective sensors for Ni<sup>2+</sup> ions using carboxylated and methylated porphine, *Sensors*, 3, (2003), 393 (**I.F. = 2.67**)  
**L.P. Singh** and J.M. Bhatnagar
46. Physical and mineralogical evaluation of brick sample from an ancient altar structure in Garhwal Himalayan region, *Current Science*, 85(10), (2003), 1478 (**I.F. = 1.09**)  
J.M. Bhatnagar and **L.P. Singh**
47. Effect of ligand structure on the efficiency of electron injection from excited Ru-phenanthroline complexes to nanocrystalline TiO<sub>2</sub> films, *J. Phys. Chem. B*, 106, (2002), 374. (**I.F. = 2.06**)  
K. Hara, H. Horiuchi, R. Katoh, **L.P. Singh**, H. Sugihara, K. Sayama, S. Murata, M. Tachiya and H. Arakawa
48. New Ru(II) phenanthroline complex photosensitizers having different number of carboxylic groups for dye-sensitized solar cell on nanocrystalline TiO<sub>2</sub> films, *Journal of Photochem. & Photobiol. A*, 145, (2001), 117. (**I.F. = 2.67**)  
K. Hara, H. Sugihara, **L.P. Singh**, A. Islam, R. Katoh, M. Yanagida, K. Sayama, S. Murata and H. Arakawa
49. Sensitization of nanocrystalline TiO<sub>2</sub> film by ruthenium(II) diimine dithiolate complexes, *J. of Photochemistry and Photobiology A: Chem* 145, (2001), 135. (**I.F. = 2.67**)  
A. Islam, H. Sugihara, K. Hara, **L.P. Singh**, R. Katoh, M. Yanagida, Y. Takahashi, S. Murata and H. Arakawa
50. Dye sensitization of nanocrystalline titanium dioxide with square planar platinum(II) diiminedithiolate complexes, *Inorganic Chemistry*, 40, (2001), 5371. (**I.F. = 4.85**)  
A. Islam, H. Sugihara, K. Hara, **L.P. Singh**, R. Katoh, M. Yanagida, Y. Takahashi, S. Murata and H. Arakawa
51. Synthesis and photophysical properties of ruthenium(II) charge transfer sensitizers containing 4,4'-dicarboxy-2,2'-biquinoline and 5,8-dicarboxy-6,7-dihydro-dibenzo [1,10]-phenanthroline, *Inorg. Chim. Acta* 322, (2001), 7. (**I.F. = 2.00**)  
A. Islam, H. Sugihara, **L. P. Singh**, K. Hara, R. Katoh, Y. Nagawa, M. Yanagida, S. Murata and H. Arakawa
52. A new efficient photosensitizer for nanocrystalline solar cells: synthesis and characterization of *cis*-dithiocyanato bis (4,7-dicarboxy-1,10-phenanthroline) ruthenium(II), *Dalton Trans.*(2000), 2817. (**I.F. = 4.02**)  
H. Sugihara, **L.P. Singh**, K. Sayama, K. Hara, R. Katoh, M. Yanagida, A. Islam, H. Arakawa, M.K. Nazeeruddin and M. Gratzel
53. Dual electron injection from charge transfer excited states of nanocrystalline TiO<sub>2</sub>-anchored Ru(II)-4,4'-dicarboxy-2,2'-biquinoline complex, *Chem. Lett.*, (2000), 490. (**I.F. = 1.80**)  
A. Islam, H. Sugihara, K. Hara, **L.P. Singh**, R. Katoh, M. Yanagida, Y. Takahashi, S. Murata and H. Arakawa

54. New platinum (II) polypyridyl photosensitizer for nanocrystalline TiO<sub>2</sub> solar cells, *New J. Chem.*, (2000), 343. **(I.F. = 3.26)**  
A. Islam, H. Sugihara, K. Hara, **L.P. Singh**, R. Katoh, M. Yanagida, Y. Takahashi, S. Murata and H. Arakawa
55. Influence of Fly Ash on the Growth and Yield of Mustard Plants (*Brassica juncea* Czern & Coss), *Chemical and Environmental Research* **9** (3/4), 303-308  
S. Siddiqui, **L.P. Singh**, M.W. Khan
56. Molybdate sensor based on 5, 10, 15, 20-tetraphenylporphyrinatocobalt complex in PVC matrix, *Anal. Chim. Acta*, 379, (1999), 201. **(I.F. = 4.95)**  
V.K. Gupta, A.K. Jain, **L.P. Singh**, U. Khurana and P. Kumar
57. PVC based neutral carrier and organic exchanger membranes as sensors for the determination of Sr<sup>2+</sup> and Ba<sup>2+</sup>, *Sens. & Act. B*, 55, (1999). **(I.F. = 5.70)**  
V.K. Gupta, A.K. Jain, U. Khurana and **L.P. Singh**
58. Efficient photosensitization of nanocrystalline TiO<sub>2</sub> films by a new class of sensitizer: *cis*-Dithiocyanato bis (4,7-dicarboxy-1,10-phenanthroline) ruthenium(II) ***Chem. Lett.*** (1998), 1005. **(I.F. = 1.80)**  
H. Sugihara, **L.P. Singh**, K. Sayama, H. Arakawa, M.K. Nazeeruddin and M. Gratzel
59. Zn<sup>2+</sup> sensor based on Zn-bis(2,4,4-trimethylpentyl) dithiophosphonic acid complex in PVC matrix, *Electrochimica Acta*, 43, (1998), 2047. **(I.F. = 4.79)**  
V.K. Gupta, A.K. Jain, **L.P. Singh** and U. Khurana
60. Novel PVC-based membrane sensors selective for vanadyl ions, *Talanta*, 46, (1998), 1453. **(I.F. = 4.16)**  
A.K. Jain, V.K. Gupta, **L.P. Singh** and U. Khurana
61. A new cerium(IV) vanadate based solid membrane electrode for Bi(III) *Electroanalysis*, 9, (1997), 1360. **(I.F. = 2.85)**  
A.K. Jain, V.K. Gupta, **L.P. Singh** and U. Khurana
62. Porphyrins as carrier in PVC based membrane potentiometric sensors for nickel (II), *Anal. Chim. Acta*, 335, (1997), 33. **(I.F. = 4.95)**  
V.K. Gupta, A.K. Jain, **L.P. Singh** and U. Khurana
63. PVC-macrocycles based membranes for the determination of cobalt(II) ions, *Analyst*, 122, (1997), 583-586. **(I.F. = 3.98)**  
A.K. Jain, V.K. Gupta, **L.P. Singh** and U. Khurana
64. A new membrane sensor for UO<sub>2</sub><sup>2+</sup> based on 2-hydroxyacetophenone oxime-thiourea-trioxane resins, *Electroanalysis*, 9, (1997), 857. **(I.F. = 2.85)**  
A.K. Jain, V.K. Gupta, U. Khurana and **L.P. Singh**
65. A solid membrane sensor for Hg(II) ions, *Bull. Electrochem*, 12, (1996), 418  
A.K. Jain, V.K. Gupta and **L.P. Singh**
66. Nickel(II) selective electrodes based on macrocyclic compounds, *Anal. Comm.*, 32, (1995), 193.  
**L.P. Singh** and Harsh Vardhan
67. A solid membrane sensor for Hg(II) ions, *Bull. Electrochem*, 12, (1996), 418  
A.K. Jain, V.K. Gupta and **L.P. Singh**
68. A solid membrane sensor for chromate ions, *Sen. & Act. B*, 25, (1995), 729 **(I.F. = 5.70)**  
A.K. Jain, **L.P. Singh** and P.K. Jain
69. A polystyrene based heterogeneous solid membrane of cerium(IV) selenite as sensor for Hg(II) ions, *Ind. J. Chem. Tech.*, 2, 1995, 189. **(I.F. = 0.66)**  
A.K. Jain, V.K. Gupta and **L.P. Singh**

70. Copper (II) selective electrodes based on macrocyclic compounds, *Anal Comm.*, 32, (1995), 99.  
A.K. Jain, V.K. Gupta, B.B. Sahoo and **L.P. Singh**
71. Neutral carrier and organic resin based membranes as sensors for uranyl ions, *Anal. Comm.*, 32, (1995), 263.  
A.K. Jain, V.K. Gupta and **L.P. Singh**
72. A new polystyrene based heterogeneous membrane of cerium (IV) vanadate as cadmium (II) ion selective electrode, *Ind. J. Chem.*, 33A, 1994, 1122. (**I.F. = 0.47**)  
A.K. Jain and **L.P. Singh**
73. A polystyrene based heterogeneous ion-exchange membrane of cerium (IV) phosphomolybdate as copper(II) ion selective electrode,  
*Ind. J. Chem.*, 33A, (1994), 272. (**I.F. = 0.47**)  
A.K. Jain, P. Singh and **L.P. Singh**

#### **Papers presented at various National and International Conferences: 54**

1. Presented a paper entitled "A solid membrane sensor for chromate ions" in the Fifth International Meeting on Chemical Sensors held in **Rome, Italy** from July 11-14, 1994.
2. Presented a paper entitled "A solid membrane sensor for Hg (II) ions" in the Fifth AEST held in **Madras, India** from Nov. 24-26, 1994.
3. Accepted a paper entitled "Analytical selectivity of a membrane electrode based on chelating ion-exchange resin" in the 4<sup>th</sup> International Conference and Industrial Exhibition on Ion-exchange Processes" Sept. 10-14, 1995 in **Clywd, England**.
4. Presented a paper entitled "PVC-pyrimidine based solid membrane electrode selective for Hg(II) ions" in the 36<sup>th</sup> IUPAC Congress held in **Geneva, Switzerland** from August 17-22, 1997.
5. Presented a paper entitled "Pyrimidine based solid membrane electrode selective for mercury(II) ions" in the Fourth Recent Trends in Instrumental Method of Analysis 1995, held in Department of Chemistry, **Univ. of Roorkee, India**.
6. Paper entitled "A PVC based 12-crown-4 membrane potentiometric sensor for zinc(II) ions" was accepted in the International Conference on "Recent Trends in Sensor Developments for Monitoring Environmental Quality" held at **IIT- Kharagpur**, India during December 29-31, 1997
7. Paper entitled "PVC based neutral carrier and organic exchanger membranes as sensors for the determination of Sr(II) and Ba(II) ions" was accepted in the International Conference on Recent Trends in Sensor Developments for Monitoring Environmental Quality held at **IIT-Kharagpur**, during Dec. 1997.
8. Paper entitled "PVC Based monoaza-18-crown-6 membrane potentiometric sensor for the monitoring of cadmium" was accepted in the 28<sup>th</sup> Annual International Symposium on Environmental Analytical Chemistry (ISEAC28) held in **Geneva, Switzerland** during Feb. 1998.
9. Presented a paper entitled "Synthesis and properties of Ru(II) complexes with carboxylated 1,10-phenanthroline ligands" in the 75<sup>th</sup> Annual meeting of **Chemical Society of Japan** in Sept. 1998.
10. Presented a paper entitled "Synthesis and properties of Ru(II) complexes with carboxylated 1,10-phenanthroline ligands(II)" in the 76<sup>th</sup> Annual meeting of **Chemical Society of Japan** in March 1999.
11. Presented a paper entitled "Dye sensitized solar cells: Synthesis and properties of Ru(II) complexes with carboxylated 1,10-phenanthroline" in PCPM'99, **Tsukuba, Japan** in March 1999.
12. Presented a paper entitled "Synthesis of ruthenium complexes of carboxylated phenanthroline and application to dye sensitized solar cells" was presented in the 217<sup>th</sup> American Chemical Society held in **Anaheim, USA**, during March 1999.



13. Accepted a paper entitled "Synthesis and properties of carboxylated polypyridine Ru(II) complexes of  $RuL_2X_2$  type in the 13<sup>th</sup> ISPPCC held in **Lipori, Italy** during June 25-30, 1999.
14. A research paper entitled "Synthesis and properties of Ru(II) complexes with carboxylated phenanthroline" was presented in **Saitama, Japan** during Aug. 9-11, 1999.
15. A research paper entitled "Synthesis and properties of Ru(II) complexes with carboxylated phenanthroline" was presented in the 77<sup>th</sup> Japan Chemical Society Meeting in **Hokkaido, Japan** during Sept. 1999.
16. A research paper entitled "Synthesis and properties of Ru(II)-phenanthroline complexes with different number of carboxylated groups" was presented in PCPM, **Tsukuba, Japan** in March 2000.
17. Presented a paper entitled "Instrumentation and quality control in bricks production" at Regional Workshop on Technical Feasibility and Scope of Manufacturing Clay-fly ash bricks in Karimnagar Distt. in July, 2001 at **NTPC Ramagundam (A.P.)**.
18. "Detoriation of masonries in heritage buildings" at "Strategy and methodology for conservation of heritage buildings and monuments in India" at **CBRI, Roorkee** during April 4-5, 2002
19. "Manufacturing of country roofing tiles from black/alluvial soils" at Workshop-cum-training programme at **CBRI, Roorkee** during June 10-11, 2003.
20. Presented a paper entitled "Pyrimidine based solid membrane sensor for Hg(II) ions" in the Proceedings National Symposium of Advanced Instrumental Method of Analysis (AIMA-2002) during June 7-8, 2002 at **Dehradun, India (Best Presentation Award)**.
21. Accepted "PVC based selective sensors for  $Ni^{2+}$  ions using carboxylated and methylated porphine", First International Symposium on Sensor Science, June 16-20, 2003 **France**.
22. Accepted a paper entitled Charged Diaza Crown Ethers Based Sensors for Chromate Ions in 10<sup>th</sup> IMCS, to be held **Japan** during July 2004.
23. Presented Morphological and mineralogical attributes of Indian flyashes at RECENT ADVANCES IN CHEMICAL SCIENCES (RACS-2004) **Dehradun, India**, during Dec. 18-19, 2004.
24. Studies on morphological and mineralogical features of few flyash samples for use in building products, April 1-3, 2004 at **NPL, New Delhi** during Annual EMSI-2004.
25. "Country roofing tiles for rural areas" at "Seminar on up gradation of housing amenities in rural areas" at kolkata during Nov 2004.
26. Accepted Diaza Crown Ethers based Electrochemical Sensors for Chromate Ions at 3<sup>rd</sup> International Symposium on Sensor Science (I3S) to be held at **Germany** during July 2005.
27. Utilization of flyash as secondary resource material for brick making in Maharashtra state, at FLYASH India 2005: International Congress during Dec 4-7, 2005 at **New Delhi**.
28. Morphological and mineralogical attributes of India flyashes at Advanced Characterisation Techniques on Nanomaterials (ACTON-05) at **IIT- Roorkee, India** during 2005.
29. Mineralogical and morphological evaluations of flyash as a secondary resource material for building bricks at 2<sup>nd</sup> UCOST Science Congress during Nov 15-17, 2007 at **Nanital, India**.
30. Synthesis and characterisation of nano-silica for cementitious applications at 2<sup>nd</sup> UCOST Science Congress during Nov 25-17, 2007 at **Nanital, India**.
31. Nano-silica for the understanding of calcium-silicate-hydrate system at "Applications of nano-technology'-2007" at **Jodhpur, India** during Dec 27-29, 2007.
32. Synthesis and characterisation of nano-silica for the understanding of calcium-silicate-hydrate system at 3<sup>rd</sup> UCOST science congress at **IIT-Roorkee, India** during Nov 10-11, 2008.
33. "Properties of low-temperature burnt clay-flyash admixtures using phosphate additives" at 72<sup>nd</sup> Annual Session of Indian Ceramic Society during Jan 29-30, 2009, at **Jaipur, India**.
34. "Synthesis and Applications of Nano-Silica for the Understanding of Calcium-Silicate-Hydrate (CSH) System" at the 3<sup>rd</sup> International Symposium on Nanotechnology in Construction during May 31- June 2, 2009 at **Prague, Czech Republic**.

35. Controlling the nano size of silica powder through surfactants, in 4<sup>th</sup> Uttarakhand State Science Congress, November 12-14, 2009 at **G. B. Pant University of Agriculture and Technology, Pantnagar, India**.
36. Controlling the leaching behaviour of calcium in cement hydration using nanoparticles, in International conference on Advances in Electron Microscopy and Related Techniques, March 8-10, 2010 at **Bhabha Atomic Research Centre, Mumbai, India**
37. Reducing the Ca-leaching in cement system using nanomaterials, in 5<sup>th</sup> Uttarakhand State Science Congress, November 10-12, 2010 at **Doon University, Dehradun, India**.
38. Role of silica nanoparticles on early stage reactivity of cementitious system, in 7<sup>th</sup> Uttarakhand State Science Congress (USSTC)-2012, November 21-23, 2012 at **Graphic Era University, Dehradun, India**.
39. Presented a paper entitled “Comparative mineralogical and morphological aspects of C-S-H using silica nanoparticles”, in 4<sup>th</sup> Int. Symp. on Nanotechnology in Construction, **Crete, Greece**, May 20-22, 2012.
40. Role of silica nanoparticles on early stage reactivity of cementitious system, in 7<sup>th</sup> UCOST Congress -2012, **Dehradun, India** November 21-23, 2012.
41. Preparation of dispersed Nano-silica & its beneficial role in cement based Materials, in International conference on Advanced Materials for Energy Efficient Buildings, 13-15 February 2013.
42. Estimation of Chloride Penetration in Nano-modified Cement Mortar Using Electro migration Test, G. Mishra, A. Goel, S. K. Bhattacharyya, S. Ahalawat and L. P. Singh in International conference on Advanced Materials for Energy Efficient Buildings, 13-15 February 2013.
43. Studies on Hydration Mechanism of Cementitious System Incorporating Nanosilica, Usha Sharma\*, S.K. Bhattacharyya, S.P. Shah, L.P. Singh in International conference on Advanced Materials for Energy Efficient Buildings, 13-15 February 2013.
44. Development of Composite Cement with Limestone Filler and Fly Ash, V. Sood, L.P Singh and S. K. Agarwal in International conference on Advanced Materials for Energy Efficient Buildings, 13-15 February 2013.
45. Studies on Phase Change Materials for Energy Efficient Buildings, S. Naik B, L. P. Singh, P. C. Thapliyal and A. Kumar in International conference on Advanced Materials for Energy Efficient Buildings, 13-15 February 2013.
46. Preparation of nanoparticles using nano-powder synthesizer during 8<sup>th</sup> Uttarakhand State Science Congress during Dec 26-28, 2013 at **Dehradun, India**.
47. Microstructure improvement of cementitious systems with nanomaterials: Key for enhancing the durability of concrete, at CONCREEP@9 at **MIT, USA** Sept 22-25, 2013.
48. Improving the durability of cementitious materials using silica nanoparticles, 5<sup>th</sup> Int. Symposium on Nanotechnology in Construction, May 24-26, 2015, **Chicago, USA**
49. Nano-engineered concrete: from micro-structure to infrastructure, INDO-UK Scientific Seminar on Green Construction Materials for Sustainable Build, March 28-29, 2015
50. Studies on Hydration of tricalcium silicate incorporating silica nanoparticles, 5<sup>th</sup> Int. Symposium on Nanotechnology in Construction, May 24-26, 2015, **Chicago, USA**
51. Studies on early hydration of tricalcium silicate, International Conference on Advanced Materials for Energy, Environment and Health at **IIT Roorkee, India** March, 4-7, 2016
52. Performance evaluation of bio-based cementitious system under aggressive acid environment, International Conference on Advanced Materials for Energy, Environment and Health at **IIT Roorkee, India**, March, 4-7, 2016

53. Studies on encapsulated phase change materials for energy efficiency in buildings, International Conference on Advanced Materials for Energy, Environment and Health at *IIT Roorkee, India*, March, 4-7, 2016
54. Performance Enhancement of Cementitious Materials Using Nanotechnology, International Seminar on Emerging Building Materials and Technologies, organized by *BMTPC, New Delhi, India*, March 21-22, 2016

#### Academic Visits Abroad:

Period of Visit	Country Visited	Purpose of Visit
July, 1994	Rome, Italy	Conference
August, 1997	Geneva, Switzerland	Conference
March, 1999	Anheim, USA	Conference
October 1997- March 2000	National Institute of Materials & Chemical Research, Japan	Centre of Excellence Fellow (Post Doctoral work)
May, 2009	Prague, Czech Republic	Conference
April 2012- Aug. 2012	Centre for Advanced Cement Based Materials , Northwestern Univ., Chicago, USA	Raman Research Fellowship
September, 2013	MIT, Boston, USA	Invited Talk
March, 2014	Milan, Italy	Advanced Training
June, 2014	Scotland, UK	INDO-UK Project
May, 2015	Chicago, USA	Invited Lecture
June, 2015	Scotland, UK	INDO-UK Project
August, 2016	Scotland, UK	INDO-UK Project
May, 2017	Jinan, China	Workshop and Invited Talk

#### International Projects

S. No.	Title of the project	Collaborative Partners	Period	Role
1.	<b>BRICS Project</b> in partnership with <b>China and Russia</b> Nano-Engineered Concrete for Sustainable Infrastructure	University of Jinan, China and Belgorod Univ. , Russia	2017-2020	Principal Investigator
2.	<b>UK INDIA Education &amp; Research Initiative Project</b> Studies on nano-engineered cementitious and polymeric binders in developing high performance building materials	University of West of the Scotland, Paisley, UK	2014-2016	Principal Investigator

### **International Collaboration**

- Centre for Advanced Cement Based Materials, Northwestern University, Evanston, USA
- Centre for Nanotechnology in Construction Materials, University of West Scotland, Paisley, UK through INDO UK Thematic partnership programme.
- Belgorod State Technological University named after V.G. Shoukhov, Russia
- University of Jinan, China

### **National Collaboration**

- Indian Institute of Technology, Roorkee
- Indian Institute of Technology, Delhi
- Indian Institute of Petroleum (IIP), Dehradun.
- Gurukul Kangari Visvavidyalya, Hardwar
- Uttarakhand Technical University (UTU), Dehradun
- Patanjali Research Foundation, Hardwar
- Dehradun Institute of Technology, Dehradun

### **Recognitions**

- Editor-in-Chief, Nanotechnology in Built Environment, Whioce Publishing, Singapore
- Associate Editor, Analytical Chemistry Letters,
- World J. of Nanoscience & Engineering, by Scientific Research Publishing Inc., USA
- Nanomaterials & Molecular Nanotechnology, published by Sci Technol, USA
- International Journal of Nanoscience & Technology, published by Academic and Scientific Publishing, USA

### **Membership of Editorial Boards of the**

- Member, Board of Studies, DIT University, Dehradun
- Life member, Electron Microscope Society of India (EMSI)
- Life member, Indian Concrete Institute, India
- Life Member, Material Research Society of India

### **Keynote/invited Lectures**

- Invited Talk on Early stage hydration studies of tricalciumsilicate using silica nanoparticles in RILEM, Chennai, India during September, 08-10, 2017
- Symposium on Nanotechnology in Construction in May 2015 at Chicago, USA
- INDO-UK Scientific Seminar on Green Construction Materials for Sustainable Build during March 28-29, 2015
- INDO-US Symposium on Recent Trends in Nanobiotechnology during March 10, 2015 at Pantnagar
- S D College (P G) , Roorkee, Feb 25, 2015
- Chemical, Environmental and Material Science (CEMS-2014) at SSBUCET, Punjab University, Chandigarh, India
- Department of Urban Risk, MIT, Boston, USA, Sept. 24, 2013
- CONCREEP@9 at MIT, USA Sept 22-25, 2013.
- International conference on Advanced Materials for Energy Efficient Buildings, 13-15 February 2013
- O.P. Sinha Memorial Lecture at Dept. of Chemistry, G.K. University, March 2013
- 7<sup>th</sup> Uttarakhand State Science Congress (USSTC)-2012, Nov. 2012 at Graphic Era University, Dehradun
- Northwestern University, USA, April 2012
- INDO-US workshop, Dec. 14-15, 2010
- DIT University, Dehradun
- Ambuja Cement Foundation Day, Kolkata

### Ongoing Sponsored Research Projects

S. No.	Title of the project	Sponsoring Agency	Period	Role
1.	Capacity enhancement programme on fly ash utilisation	MoEF&CH, New Delhi	2003- continue	Principal Investigator
2.	Studies on Bio-based calcareous and siliceous construction materials	Uttarakhand Council for Biotechnology, Uttarakhand	2015-18	Principal Investigator

### Major Sponsored Research Projects Completed During the recent past:

S. No.	Title of the project	Sponsoring Agency	Period	Role
1.	Nano-engineered concrete for ultra-high performance and durability	In-house R&D project	2012-17	Principal Investigator
2.	Feasibility studies on utilization of ETP sludge for development of value added building materials	Tata Motors, Ltd.	2016-17	Co-Investigator
3.	Performance Enhancement of Cementitious and Polymeric Materials through nanotechnology	UCOST, Dehradun	2012-15	Principal Investigator
4.	Developing Building components from sponge iron waste	BMPTC, New Delhi	2010-13	Principal Investigator
5.	Preparation and Applications of Nano Materials in Cementitious system	In-house R&D project	2010-12	Principal Investigator
6.	Low Clinker Factor Cements as an Alternate Cements	In-house R&D project	2010-12	Co-Investigator
7.	Utilization of ETP sludge for making value added building components	Tata Motors, Ltd.	2012-13	Co-Investigator
8.	Synthesis and Characterisation of nano silica and its subsequent use in Calcium-Silicate-Hydrate system	UCOST, Dehradun	2008-11	Principal Investigator
9.	Studies of the reactivity of fly ash from different fields of an ESP	In-house R&D project	2008-10	Co-Investigator
10.	Development of phosphate bonded building products	CSIR, New Delhi	2007-12	Principal Investigator
11.	Techno feasibility for making clay flyash bricks in Raibarelli area	NTPC, Unchahar	2007-08	Co-Investigator
12.	Granulometric and mineralogical evaluation of flyash samples for brick making in northern region	Flyash Mission, DST, New Delhi	2005-08	Co-Investigator
13.	Techno feasibility for the utilisation of cobalt plant waste in bricks / tile making	M/s Rubamin Ltd. Baroda	9 months (2005)	Team Member
14.	Training cum demonstration programme on the manufacture of clay flyash bricks in Maharashtra state	Flyash Mission, DST, New Delhi	2005-07	Co-Investigator
15.	Techno-feasibility of utilizing tilla soils in brick making	SPCB, Tripura	2005-06	Team member
16.	Studies of BOF binder applications	TATA Chemicals	2005-06	Team member

17.	Demonstration-cum-training programme for clay flyash bricks manufacturing at Bhatinda, Ropar and Hoshiarpur area	Flyash Mission, DST, New Delhi	2004-06	Team member
18.	Field demonstration of manufacturing of clay flyash bricks in Talcher area (Orissa)	NTPC, Talcher, Orissa	2003-04	Team member
19.	Development of novel chemical sensors for heavy metals and their fixation on silicate matrix for use in building products	DST, New Delhi	2002-05	Principal Investigator
20.	Development of interlocking clay bricks and building clay products	CSIR, New Delhi	2002-07	Co-Investigator
21.	Technology package for the manufacture of country roofing tiles from Black/alluvial clays of Khanapur area, Distt. Belgaum Karnataka	KVIC, Mumbai	2002-04	Team Member
22.	Technology package for the manufacture of clay flyash bricks in Ramagundam area	NTPC, Ramagundam	2001-02	Team member
23.	Development of ceramic surfacing materials from mineral wastes	CSIR, New Delhi	2000-02	Team member
24.	Durability of flyash bricks	DST, New Delhi	2000-03	Team Member
25.	Studies on geo-technical properties of contaminated soil and effect of contaminants on sub structures	CSIR, New Delhi	2000-02	Team member

#### DETAILS OF Ph. D. THESIS and M. Tech Dissertations

S.No.	Title of Thesis	Year	Name of candidate
(A)	<b>Ph.D. Degree Completed</b>		
1.	Synthesis and characterization of nanosilica and its application in calcium-silicate-hydrate-system	2012	Dr. Saurabh Ahlawat
2.	Studies on ion selective membranes as potentiometric sensors for heavy metal ions	2012	Dr. Bhawana Sethi
3.	Engineered nanoparticles for the removal of heavy metal ions from water	2016	Dr Shalini Rajput
4.	Studies of nanomaterials in cementitious systems and their applications	2016	Dr. Geetika Mishra
5.	Early stage hydration studies of cementations materials using silica nanoparticles	2017	Dr. (Mrs) Usha Sharma
(B)	<b>Ph.D. Degree Pursuing</b>		
1.	Studies on Phase Change Materials for Energy Efficiency in Building Materials	2012	Mr. Srinivasrao Naik B.
2.	Studies on Nanomaterial incorporated cementitious system	2015	Mr. Dilshad Ali
3.	Structural behavior of SNPs incorporated high strength concrete	2015	Mr. Rohit Kumar
4.	Studies on Bio based calcareous and siliceous construction materials	2015	Ms. Vishaka Bisht

5. Hydration Studies of Cementitious composites using nanotechnology 2016 Mr. Shubham Chaudhary

(C) *M. Tech Dissertations Completed*

1. Synthesis of nanosilica and its application in strengthening cement paste 2012 Mr. Vaibhav Pratap Singh
2. Studies on Preparation and applications of nanosilica in high strength concrete 2013 Mr. Mohd. Yusuf
3. Studies on high strength sustainable concrete using Silica nanoparticles 2014 Ms. Reshmita Palla
4. Behaviour of nanosilica incorporated high strength concrete at elevated temperature 2016 Mr. Rohit Kumar
5. Incorporation of High volume flyash in cementitious system using silica nanoparticles 2016 Mr. Chetan Singh
6. Performance enhancement of concrete at elevated temperatures: A superior approach 2017 Mr. Sanket Rawat