Education, Teaching & Research Profile

Name: Narinder Singh

Address: Dr. Narinder Singh, Assistant Professor, Department of Chemistry, Indian Institute of Technology, Ropar, Nangal Road, Rupnagar, Punjab, INDIA.

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Education:

1995 – 1998	B.Sc. (Medical)	DAV College, Jalandhar, India.
1998 – 2000	M.Sc. Chemistry (IA)	Guru Nanak Dev University, Amritsar, India.
2001 – 2005	PhD Chemistry	Guru Nanak Dev University, Amritsar, India.

Work Experience:

2005 – 2006	Visiting Research Fellow	Osaka City University, Osaka, Japan.
2006 – 2008	Postdoc. Research Fellow	Yonsei University, Wonju, South Korea.
2008 - 2009	Postdoc. Research Fellow	The Robert Gordon University, Aberdeen, Scotland (U.K.).
July 2009 –TD	Assistant Professor	Indian Institute of Technology, Ropar, India.
Oct 2011-March 2015	Coordinator, Deptt. of Chemistry,	Indian Institute of Technology, Ropar, India.

TEACHING:

- **Courses Taught:**
  1. CYL101: Structure, Reactivity and Dynamics
  2. CYP100: Chemistry Laboratory 1.
  3. CYL603 Concepts of Inorganic Chemistry
  4. CYL612: Molecular recognition
  5. CYL250: Environmental Sci. & Engineering
  6. CYL701: Molecular Spectroscopy
  7. CYL703: Strategies in Supramolecular Chemistry
  8. CH002: preparatory Chemistry II
  9. CH012: Preparatory Chemistry Lab II

RESEARCH ACTIVETIES:

- **Thesis Supervised:**

  PhD thesis of Ms. Kamalpreet Kaur (IIT Ropar):

  Title of Thesis: Syntheses of podants and decoration of nanoparticles for chemosensor development.

  PhD thesis of Ms. Preeti Saluja (Thesis submitted to IIT Ropar):

  Title of Thesis: Synthesis and photophysical properties of benzimidazole/benzothiazole-based chemosensors.

  PhD thesis of Mr. Hemant Sharma (Thesis submitted to IIT Ropar):

  Title of Thesis: Synthesis of organic-bsed nanomaterials receptors and their analytical studies.

  M. Tech thesis of Ms. Nidhi Arora (Panjab University Chandigarh)

  Title of Thesis: Determination of biological important analytes using organic nano-particles

M. Tech thesis of Ms. Mary Candida Jacob (National Institute of Technology Karnataka)

Title of Thesis: Design and synthesis of organic receptors for nanoparticle synthesis and metal complexation: A search towards sensors and biological activities.

M. Tech thesis of Ms. Anu Saini (Panjab University Chandigarh)

Title of Thesis: Synthesis and coupling of imine linked receptors on silver nanoparticles for cation/anion recognition studies.

M. Tech thesis of Mr. Karan Narang (Panjab University Chandigarh)

Title of Thesis: Surface decoration of ZnO nanoparticles for chemosensor development.

M. Tech thesis of Ms. Vandana (Panjab University Chandigarh)

Title of Thesis: Design and synthesis of imine linked nanoparticles based chemosensors.

B.Tech students: 3 Students of SMMEE of IIT ropar

Title of Project: Synthesis and Studies of Biocompatible Lubricants

- **Thesis/Projects under Supervision (Guide/Co-Guide):**

Mr. Amanpreet Singh (PhD Student): Completed course work

Mr. Pushap Raj (PhD Student): Doing course work

Ms. Beant Kaur (PhD Student): Doing course work ()

Mr. Manoj Singla (PhD Student): Surface Engineering to control Erosion-Corrosion of Steam Generating Plants by Nano-Particle Coatings.

Dr. Tilak Raj: Currently working as Postdoc Fellow on the research Project concerned with one pot organic synthesis of receptors for potential biological activeties.

- **Summer Training:**

Trained following students during the summer vacation; the details of each student is as follow:

Mr. Deepinder Singh *(IISc Bangalore):*

Title of project: Design and Synthesis of Dipodal Receptors

Ms. Tanisha Sachdeva *(Regd. No.CHES1354 of Summer Research Fellowship Programme jointly sponsored by the three national science Academies of the country)*

Title of project: Synthesis of Benzimidazole and Benzothiazole based Chemosensors for Selective Recognition of Anions.

Ms. Shailja Data *(Regd. No.CHES1549 of Summer Research Fellowship Programme jointly sponsored by the three national science Academies of the country)*

Title of project: Cobalt Complex of Benzimidazole and Benzothiazole based Chemosensors for Anion Detection

Mr. Gagandeep Singh *(IISc Bangalore):*

Title of project: Design and Synthesis of Tripodal Receptors

Mr. Ritesh Kumar *(Regd. No. CHES221 of Summer Research Fellowship Programme jointly sponsored by the three national science Academies of the country)*

Title of project: Chemosensor Development: Fluorescent Organic Nanoparticles and Organic-Inorganic Hybrid Nanoparticles

- **RA/Postdoc Fellow:**

  Successfully supervised/supervising the following:

  Dr. Vimal Bharadwaj: Completed his training as SRF (ext.) and RA in CSIR Project on the research problem of "Design and Synthesis of New Ratiometric Fluorescent Chemo-sensors: Excited State Proton Transfer involving Keto-EnolTautomerism".

  Dr. Rajni Ratti: Completed her training as SRF (ext.) in CSIR Project on the research problem of "Design and Syntheses of a new class of salen based metal complexes: A search for catalytic activity".

  Dr. Ajnesh Singh: Worked as RA in the CSIR Project on the research problem of "Design and Synthesis of New Ratiometric Fluorescent Chemo-sensors: Excited State Proton Transfer involving Keto-EnolTautomerism".

  Dr. Jasminder Singh: Worked as RA in the CSIR Project on the research problem of "Design and Synthesis of New Ratiometric Fluorescent Chemo-sensors: Excited State Proton Transfer involving Keto-EnolTautomerism".

Research Projects:

S. No.	Name of Funding Agency	Project Title	Role	Total Funding (Appro.)
1.	CSIR, India	Design and Synthesis of New Ratiometric Fluorescent Chemo-sensors: Excited State Proton Transfer involving Keto-EnolTautomerism. (Project completed)	PI	18 Lakh
2.	CSIR, India	Design and Syntheses of A New Class of Salen Based Metal Complexes: A Search for Catalytic Activity (Project completed)	Co-PI	18. Lakh
3.	India-Korean Joint Project (DST-ROK)	Design and Synthesis of Quantum Dot-Based Benzimidazole-Coupled Chemosensors (Project completed)	PI	Exchange Visits
4.	ISIRD Grant from IIT Ropar	Synthesis and Recognition Properties of New Tripodal and Tetrapodal Framework (Project completed)	PI	7.5 Lakh
5.	DST, India	Surface Engineering to control Erosion-Corrosion of Steam Generating Plants by Nano-Particle Coatings (Project completed)	Co-PI	42 Lakh
6.	India-Mexico Joint Project (DST-CONACYT)	Synthesis of Au(I) complexes luminescent based benzimidazole, pyridyl and amine: Gold nano-particles for sensor development. (Project completed)	PI	Exchange Visits

7.	CSIR, India	Synthesis of heterotripodal receptors, metal complexes and nanohybrids for evaluation of antimicrobial activities (Project Submitted)	PI	-
8.	DST, India	Design and Synthesis of 1,8-Naphthalimide-Based Receptors: Chemosensor and Biosensor Development (Project Submitted)	PI	-

LIST OF PUBLICATIONS

#2015#

1. Optical probes for the detection of protons, and alkali and alkaline earth metal cations. Graham R. C. Hamilton, Suban K. Sahoo, Sukanta Kamila, **Narinder Singh**, Navneet Kaur, Barry W. Hyland and John F. Callan, **Chemical Society Review** 2015. DOI: 10.1039/c4cs00365a.

2. Sensing in aqueous medium: mechanism and its application in the field of molecular recognition. Hemant Sharma, Navneet Kaur, and **Narinder Singh**, **Analytical Methods**, 2015, DOI: 10.1039/C5AY00483G **(INVITED REVIEW ARTICLE).**

3. A highly selective fluorescent 'turn-on' chemosensor for Hg^{2+} based on a phthalazin-hydrazone derivative and its application in human cervical cancer cell imaging, Dipesh Mahajan, Niles Khairnar, Banashree Bandhopadhyay, Suban K. Sahoo, Anupam Basu, Jasminder Singh, **Narinder Singh**, Ratnamala Bendre, Anil Kuwar, **New Journal of Chemistry**, 2015, 39, 3071-3076.

4. Fluorescent organic nanoparticles (FONs) of imine-linked peptide for the detection of Cr^{3+} in aqueous medium. Navneet Kaur, Simanpreet kaur, Richa Mehan, Carlos Alberto Huerta Aguilar, Pandiyan Thangarasu, **Narinder Singh**, **Sensors and Actuators, B: Chemical**, 2015, 206, 90-97.

5. Nanomolar Detection of Iodide in Aqueous Medium Using Organic-Inorganic Hybrid Nanoparticles: Application in Urine Analysis. Carlos Alberto Huerta-Aguilar, Hemant Sharma, Pandiyan Thangarasu, **Narinder Singh**, **Chem Plus Chem**, Article in Press DOI: 10.1002/cplu.201402312.

6. Nanohybrid chemosensor for the simultaneous detection of fluoride and iodide in aqueous system and its utility in real samples. Carlos Alberto Huerta-Aguilar, Jasminder Singh, Harpreet Kaur, Thangarasu Pandiyan, **Narinder Singh**, **Electroanalysis**, 2015, Article in Press DOI: 10.1002/elan.201400606.

7. Fluorescent organic nanoparticles of dihydropyrimidone derivatives for selective recognition of iodide using a displacement assay: application of the sensors in water and biological fluids. Amanpreet Kaur, Tilak Raj, Simanpreet Kaur, **Narinder Singh** and Navneet Kaur, **Organic & Biomolecular Chemistry**, 2015, 13, 1204-1212.

8. A benzimidazole/benzothiazole-based electrochemical chemosensor for nanomolar detection of guanine Hemant Sharma, **Narinder Singh** and Doo Ok Jang, **RSC Advances,** 2015, 5, 6962-6969.

9. A novel chromogenic and fluorogenic chemosensor for detection of trace water in methanol. Umesh Fegade, Smita Patil, Rajinder Kaur, Suban K. Sahoo, **Narinder Singh**, Ratnamala Bendre, Anil Kuwar, **Sensors and Actuators B: Chemical**, 2015, 210, 324-327.

10. A novel phthalazine based highly selective chromogenic and fluorogenic chemosensor for Co^{2+} in semi-aqueous medium: application in cancer cell imaging. Smita Patil, Rahul Patil, Umesh Fegade, Banashree Bondhopadhyay,

Umesh Pete, Suban K. Sahoo, **Narinder Singh**, Anupam Basu, Ratnamala Bendre and Anil Kuwar, **Photochemical and Photobiological Sciences**, 2015, 14, 439-443.

11. A highly selective fluorescent 'turn-on' chemosensor for Zn^{2+} based on a benzothiazole conjugate: their applicability in live cell imaging and use of the resultant complex as a secondary sensor of CN^-. Nilesh Khairnar, Kundan Tayade, Suban K. Sahoo, Banashree Bondhopadhyay, Anupam Basu, Jasminder Singh, **Narinder Singh**, VikasGite and Anil Kuwar, **Dalton Transactions**, 2015, 44, 2097-2102.

12. Fluoremetric determination of amoxicillin drug in aqueous medium using hybrid framework of organic-inorganic nanoparticles. Anu Saini, Jasminder Singh, Rajinder Kaur, **Narinder Singh**, Navneet kaur, **Sensors and Actuators, B: Chemical**, 2015, 209, 524-529.

13. One-pot synthesis of tricyclic dihydropyrimidine derivatives and their biological evaluation. Navneet Kaur, Kamalpreet Kaur, Tilak Raj, Gaganpreet Kaur, Ajnesh Singh, Thammarat Aree, Sae-Jin Park, Tack-Joong Kim, **Narinder Singh**, Doo Ok Jang, **Tetrahedron**, 2015, 71, 332-337.

14. A new class of pyrene based multifunctional chemosensors for differential sensing of metals in different media: Selective recognition of Zn^{2+} in organic and Fe^{3+} in aqueous medium. Tilak Raj, Preeti Saluja, **Narinder Singh, Sensors and Actuators, B: Chemical**, 2015, 206, 98-106.

15. A two-in-one dual channel chemosensor for Fe^{3+} and Cu^{2+} with nanomolar detection mimicking the IMPLICATION logic gate. Anil Kuwar, Rahul Patil, Amanpreet Singh, Suban K. Sahoo, Jaromir Marek, **Narinder Singh**, **Journal of Materials Chemistry C**, 2015, 3, 453-460.

16. Three novel input logic gates supported by fluorescence studies: Organic nanoparticles (ONPs) as chemo-sensor for detection of Zn^{2+} and Al^{3+} in aqueous medium. Carlos Alberto Huerta-Aguilar, Thangarasu Pandiyan, **Narinder Singh,** Narayanan Jayanthi, **Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy**, 2015, 146, 142-150.

17. Cu^{2+}- driven selective colorimetric sensing of iodide ions and AND logic gate using citrate-capped AgNPs. Shilpa Bothra, Rajender Kumar, Anil Kuwar, **Narinder Singh**, Suban K. Sahoo, **Materials Letters**, 2015, 145, 34-36.

18. Fire side erosion-corrosion protection of boiler tubes by nanostructured coatings. Manoj Kumar, Harpreet Singh, **Narinder Singh**, **Materials and Corrosion**, Article in Press DOI: 10.1002/maco.201407954.

19. Study of mechanical properties and high temperature oxidation behavior of a novel cold-spray Ni-20Cr coating on boiler steels. Narinder Kaur, Manoj Kumar, Sanjeev K. Sharma, Deuk Young Kim, S. Kumar, N.M. Chavan, S.V. Joshi, **Narinder Singh**, Harpreet Singh, **Applied Surface Science**, 2015, 328, 13–25.

20. A chemosensor showing discriminating fluorescent response for highly selective and nanomolar detection of Cu^{2+} and Zn^{2+} and its application in molecular logic gate. Umesh A. Fegade, Suban K. Sahoo, Amanpreet Singh, **Narinder Singh**, Sanjay B. Attarde, Anil S. Kuwar, **Analytica Chimica Acta**, 2015, Article in Press DOI: 10.1016/j.aca.2015.02.051.

21. Pyrimidine- based functional fluorescent organic nanoparticle probe for detection of pseudomonas aeruginosa. Gaganpreet Kaur, Tilak Raj, Navneet Kaur, **Narinder Singh**, **Organic & Biomolecular Chemistry**, 2015, Advance Article DOI: 10.1039/C50B00206K.

22. Selective chemosensing of spermidine based on fluorescent organic nanoparticles in aqueous media via a Fe^{3+} displacement assay. Shweta Chopra, jasminder Singh, Harpreet Kaur, Harpreet Singh, **Narinder Singh**, Navneet kaur, **New Journal of Chemistry**, 2015, Advance Article DOI: 10.1039/C4NJ02381A.

#2014#

23. Fluorometric appraisal of HSO_4^- in aqueous media and daily utilities using organic-inorganic nanohybrids**.** Rajinder Kaur, Jasminder Singh, Anu Saini, **Narinder Singh** and Navneet Kaur, **RSC Advances**, 2014, 4, 48004-48011.

24. A ball-milling strategy for the synthesis of benzothiazole, benzimidazole and benzoxazole derivatives under solvent-free conditions**.** Hemant Sharma, **Narinder Singh** and Doo Ok Jang, **Green Chemistry**, 2014, 16, 4922-4930.

25. Fluorescent organic nanoparticles of tripodal receptor as sensor for HSO_4^- in aqueous medium: application to real sample analysis. Shweta Chopra, Jasminder Singh, **Narinder Singh** and Navneet Kaur, **Analytical Methods**, 2014, 6, 9030-9036.

26. Novel fluorescent chemosensing of CN^- anions with nanomolar detection using the Zn^{2+} isonicotinohydrazide metal complex**.** Nilesh Khairnar, Kundan Tayade, Shilpa Bothra, Suban K. Sahoo, Jasminder Singh, **Narinder Singh**, Ratnamala Bendre and Anil Kuwar, **RSC Advances**, 2014, 4, 41802-41806.

27. Polymer-based biocompatible fluorescent sensor for nano-molar detection of Zn^{2+} in aqueous medium and biological samples. Kamalpreet Kaur, Manjot Kaur, Amanpreet Kaur, Jasminder Singh, **Narinder Singh**, Susheel K. Mittal and Navneet Kaur, **Inorganic Chemistry Frontiers**, 2014,1, 99-108.

28. A selective and discriminating noncyclic receptor for HSO_4^- ion recognition**.** Umesh Fegade, Suban K. Sahoo, Amanpreet Singh, Pramod Mahulikar, Sanjay Attarde, **Narinder Singh** and Anil Kuwar, **RSC Advances**, 2014, 4,15288-1529.

29. Naphthalimide-based organic nanoparticles for aluminium recognition in acidic soil and aqueous media. Anu Saini, Jasminder Singh, Rajinder Kaur, **Narinder Singh** and Navneet Kaur, **New Journal of Chemistry**, 2014, 38, 4580-4586.

30. Al^{3+} selective colorimetric and fluorescent red shifting chemosensor: application in living cell imaging Rahul Patil, Anuradha Moirangthem, Ray Butcher, **Narinder Singh**, Anupam Basu, Kundan Tayade, Umesh Fegade, Dilip Hundiwale and Anil Kuwar, **Dalton Transactions**, 2014, 43, 2895-2899.

31. 2,2′-(Hydrazine-1,2-diylidenedimethylylidene)bis(6-isopropyl-3-methylphenol) based selective dual-channel chemosensor for Cu^{2+} in semi-aqueous media**.** Umesh Fegade, Anu Saini, Suban K. Sahoo, **Narinder Singh**, Ratnamala Bendre and Anil Kuwar, **RSC Advances**, 2014, 4, 39639-39644.

32. Exploration of selective recognition of iodide with dipodal sensor: 2,2′-[ethane-1,2-diylbis(iminoethane-1,1-diyl)] diphenol**.** Kundan Tayade, Judith Gallucci, Hemant Sharma, Sanjay Attarde, Rahul Patil, **Narinder Singh** and Anil Kuwar, **Dalton Transactions**, 2014, 43, 3584-3588.

33. "Turn-on" fluorescent chemosensor for zinc(II) dipodal ratiometric receptor: application in live cell imaging. Kundan Tayade, Banashree Bondhopadhyay, Hemant Sharma, Anupam Basu, Vikas Gite, Sanjay Attarde, **Narinder Singh** and Anil Kuwar, **Photochemical and Photobiological Sciences**, 2014,13, 1052-1057.

34. Imine-linked chemosensors for the detection of Zn^{2+} in biological samples**.** Preeti Saluja, Vimal K. Bhardwaj, Thangarasu Pandiyan, Simanpreet Kaur, Navneet Kaur and **Narinder Singh**, **RSC Advances**, 2014, 4, 9784-9790.

35. Protein mixtures of environmentally friendly zein to understand protein–protein interactions through biomaterials synthesis, hemolysis, and their antimicrobial activities. Aabroo Mahal, Manoj Kumar Goshisht, Poonam Khullar, Harsh Kumar, **Narinder Singh**, Gurinder Kaur and Mandeep Singh Bakshi, **Physical Chemistry Chemical Physics**, 2014,16, 14257-14270.

36. Organic–inorganic nanohybrids and their applications in silver extraction, chromogenic Cu^{2+}detection in biological systems, and hemolytic assay**.** Ajnesh Singh, Vimal Kumar Bhardwaj, Gurinder Kaur, Kamalpreet Kaur, **Narinder Singh** and Mandeep Singh Bakshi, **RSC Advances**, 2014, 4, 21079-21088.

37. A Cu(II) complex of an imidazolium-based ionic liquid: synthesis, X-ray structure and application in the selective electrochemical sensing of guanine**.** Amanpreet Singh, Ajnesh Singh and **Narinder Singh**, **Dalton Transactions**, 43, 16283-16288.

38. Fluorometric sensing of Hg^{2+} ions in aqueous medium by nano-aggregates of a tripodal receptor. Ajnesh Singh, Simanpreet Kaur, **Narinder Singh** and Navneet Kaur, **Organic and Biomolecular Chemistry**, 2014, 12, 2302-2309.

39. Nanoaggregates of benzothiazole-based amidine-coupled chemosensors: a chemosensor for Ag^{+} and the resultant complex as a secondary sensor for Cl^{-}, Tilak Raj, PreetiSaluja, **Narinder Singh** and Doo Ok Jang, **RSC Advances**, 2014, 4, 5316-5321.

40. Development of chemosensor for Sr^{2+} using organic nanoparticles: application of sensor in product analysis for oral care**.** Simanpreet Kaur, Amanpreet Kaur, Navneet Kaur and **Narinder Singh**, **Organic and Biomolecular Chemistry**, 2014, 12, 8230-8238.

41. Design and syntheses of novel fluorescent organosilicon-based chemosensors through click silylation: detection of biogenic amines. Gurjaspreet Singh, Satinderpal Singh Mangat, Hemant Sharma, Jandeep Singh, Aanchal Arora, Ajay Pal Singh Pannu and **Narinder Singh**, **RSC Advances**, 2014, 4, 36834-36844.

42. Imidazole and imine coated ZnO nanoparticles for nanomolar detection of Al(III) and Zn(II) in semi-aqueous media. Hemant Sharma, **Narinder Singh**, Doo Ok Jang,**Tetrahedron Letters**, 2014, 55, 6623-6626.

43. Fluorescence detection by thiourea based probe of physiologically important sodium ion. Kundan Tayade, G. Krishna Chaitanya, Jasminder Singh, **Narinder Singh**, Sopan Ingle, Sanjay Attarde, Anil Kuwar, **Journal of Luminescence**, 2014, 154, 68-73.

44. Architecture of dipodal ratiometric motif showing discrete nanomolar response towards fluoride ion. Kundan Tayade, Suban K. Sahoo, Amanpreet Singh, **Narinder Singh**, Pramod Mahulikar, Sanjay Attarde, Anil Kuwar, **Sensors and Actuators B: Chemical**, 2014, 202, 1333-1337.

45. Colorimetric and fluorescent “on–off” chemosensor for Cu^{2+} in semi-aqueous medium. Umesh Fegade, Suban K. Sahoo, Sanjay Attarde, **Narinder Singh**, Anil Kuwar, **Sensors and Actuators B: Chemical**, 2014, 202, 924-928.

46. Highly selective turn-on fluorescent sensor for nanomolar detection of biologically important Zn^{2+} based on isonicotinohydrazide derivative: Application in cellular imaging. Kundan Tayade, Suban K. Sahoo, Banashree Bondhopadhyay, Vimal K. Bhardwaj, **Narinder Singh**, Anupam Basu, Ratnamala Bendre, Anil Kuwar, **Biosensors and Bioelectronics,** 2014, 61, 429-433.

47. Rhodamine based organic nanoparticles for sensing of Fe^{3+} with high selectivity in aqueous medium: Application to iron supplement analysis. Amanpreet Singh, Sneha Sinha, Rajinder Kaur, Navneet Kaur**, Narinder Singh**, **Sensors and Actuators B: Chemical**, 2014, 204, 617-621.

48. Ratiometric fluorescent probe for biothiol in aqueous medium with fluorescent organic nanoparticles. Vimal K. Bhardwaj, Hemant Sharma, **Narinder Singh**, **Talanta**, 2014, 129, 198-202.

49. Fluorogenic ratiometric dipodal optode containing imine-amide linkages: Exploiting subtle thorium (IV) ion sensing. Kundan Tayade, Amanpreet Kaur, Sandesh Tetgure, G. Krishana Chaitanya, **Narinder Singh**, Anil Kuwar, **Analytica Chimica Acta**, 2014, 852, 196-202.

50. A fluorescent “turn-on” sensor for the biologically active Zn^{2+} ion. Kundan Tayade, Suban K. Sahoo, Shweta Chopra, **Narinder Singh**, Banashree Bondhopadhyay, Anupam Basu, Nilima Patil, Sanjay Attarde, Anil Kuwar, **Inorganica Chimica Acta**, 2014, 421, 538-543.

51. “Turn-on” fluorescent dipodal chemosensor for nano-molar detection of Zn^{2+}: Application in living cells imaging. Umesh Fegade, Hemant Sharma, Banashree Bondhopadhyay, Anupam Basu, Sanjay Attarde, **Narinder Singh**, Anil Kuwar, **Talanta,** 2014, 125, 418-424.

52. Fluorescent organic nanoparticles as chemosensor for nanomolar detection of Cs^{+} in aqueous medium. Shweta Chopra, **Narinder Singh**, Pandiyan Thangarasu, Vimal K. Bhardwaj, Navneet Kaur, **Dyes and Pigments**, 2014, 106, 45-50.

53. Nanoparticle-based, organic receptor coupled fluorescent chemosensors for the determination of phosphate. Navneet Kaur, Simanpreet Kaur, Amanpreet Kaur, Preeti Saluja, Hemant Sharma, Anu Saini, Nisha Dhariwal, Ajnesh Singh, **Narinder Singh**, **Journal of Luminescence**, 2014, 145,175-179.

54. Azo dye coupled imine linked dipodal chemosensor: Anion recognition with counter anion displacement assay. Kamalpreet Kaur, Ajnesh Singh, **Narinder Singh**, **Sensors and Actuators B: Chemical**, 2014, 191, 734-740.

55. An amide based dipodal Zn^{2+} complex for multications recognition: Nanomolar detection. Umesh Fegade, Hemant Sharma, **Narinder Singh**, Sopan Ingle, Sanjay Attarde, Anil Kuwar, **Journal of Luminescence**, 2014, 149, 190-195.

56. 2,2′-[Benzene-1,2-diylbis(iminomethanediyl)]diphenol derivative bearing two amine and hydroxyl groups as fluorescent receptor for Zinc(II) ion. Kundan Tayade, Suban K. Sahoo, Rahul Patil, **Narinder Singh**, Sanjay Attarde, Anil Kuwar, **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy**, 2014, 126, 312-316.

57. A novel urea-linked dipodal naphthalene-based fluorescent sensor for Hg(II) and its application in live cell imaging. Kundan Tayade, Banashree Bondhopadhyay, Anupam Basu, G. Krishna Chaitanya, Suban K. Sahoo, **Narinder Singh**, Sanjay Attarde, Anil Kuwar, **Talanta**, 2014, 122, 16-22.

58. Highly selective and sensitive receptor for Fe^{3+} probing. Umesh Fegade, Ajnesh Singh, G. Krishna Chaitanya, **Narinder Singh**, Sanjay Attarde, Anil Kuwar, **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy**, 2014, 121, 569-574.

59. Design and Synthesis of a Pyridine Based Chemosensor: Highly Selective Fluorescent Probe For Pb^{2+}. Kundan C. Tayade, Anil S. Kuwar, Umesh A. Fegade, Hemant Sharma, **Narinder Singh**, Umesh D. Patil, Sanjay B. Attarde, **Journal of Fluorescence**, 2014, 24, 19-26.

60. Urea Based Dipodal Fluorescence Receptor for Sensing of Fe^{3+} Ion in Semi-Aqueous Medium. Umesh Fegade, Hemant Sharma, Sanjay Attarde, **Narinder Singh**, Anil Kuwar, **Journal of Fluorescence**, 2014, 24, 27-37.

61. 2-((E)-(2-aminophenylimino)methyl)-6-isopropyl-3-methylphenol based fluorescent receptor for dual Ni^{2+} and Cu^{2+} recognition: Nanomolar detection. Shashikant Pawar, Umesh Fegade, Vimal K. Bhardwaj, **Narinder Singh**, Ratnamala Bendre, Anil Kuwar, **Polyhedron**, 2014, 87, 79-85.

62. Colorimetric and fluorescent "on-off" chemosensor for Cu^{2+} in semi-aqueous medium. Umesh Fegade, Suban K. Sahoo, Sanjay Attarde, **Narinder Singh**, Anil Kuwar, **Sensors and Actuators, B: Chemical**, 2014, 202, 924-928.

63. Highly sensitive ratiometric chemosensor for selective ‘Naked-Eye’ nanomolar detection of Co^{2+} in semi-aqueous media. Samita Patil, Umesh Fegade, Suban K. Sahoo, Amanpreet Singh, Jaromir Marek, **Narinder Singh**, Ratnamala Bendre, Anil Kuwar, **Chemical Physics and Physical Chemistry**, 2014, 15, 2230-2235.

64. A fluorescent and colorimetric sensor for nanomolar detection of Co^{2+} in water. Anil Kuwar, Rahul Patil, Amanpreet Singh, Ratnamala Bendre, **Narinder Singh**, **Chemical Physics and Physical Chemistry**, 2014, 15, 3933-3937.

65. Aqueous-phase synthesis of copper nanoparticles using organic nanoparticles: Application of assembly in detection of Cr^{3+}. Ajnesh Singh, Simanpreet Kaur, Amanpreet Kaur, Thammarat Aree, Navneet Kaur, **Narinder Singh**, Mandeep Singh Bakshi, **ACS Sustainable Chemistry and Engineering**, 2014, 2, 982-990.

66. Production of nanocrystalline Ni-20Cr coatings for high-temperature applications. Manoj Kumar, Harpreet Singh, **Narinder Singh**, **Journal of Thermal Spray Technology**, 2014, 23, 692-707.

67. Urea based organic nanoparticles for selective determination of NADH. Jasminder Singh, Amanpreet Singh, **Narinder Singh**, **RSC. Advances**, 2014, 4, 61841- 61846.

#2013#

68. Fluorescent organic nanoparticles of Biginelli-based molecules: recognition of Hg^{2+} and Cl^{-} in an aqueous medium. Ajnesh Singh, Tilak Raj, Thammarat Aree, and **Narinder Singh**, **Inorganic Chemistry**, 2013, 52, 13830-13832.

69. ZnO-based imine-linked coupled biocompatible chemosensor for nanomolar detection of Co^{2+}. Hemant Sharma, Ajnesh Singh, Navneet Kaur, **Narinder Singh**, **ACS Sustainable Chemical Engineering**, 2013, 1, 1600-1608.

70. Fluorescent organic nanoparticles (FONs) of rhodamine-appended dipodal derivative: highly sensitive fluorescent sensor for the detection of Hg^{2+} in aqueous media. Vimal K. Bhardwaj, Hemant Sharma, Navneet Kaur, **Narinder Singh**, **New Journal of Chemistry**, 2013, 37, 4192-4198.

71. An amide based dipodal Zn^{2+} complex: nano-molar detection of HSO_4^- in a semi-aqueous system. Umesh Fegade, Hemant Sharma, Kundan Tayade, Sanjay Attarde, **Narinder Singh**, Anil Kuwar, **Organic and Biomolecular Chemistry**, 2013,11, 6824-6828.

72. Pyridyl- and benzimidazole-based ruthenium(III) complex for selective chloride recognition through fluorescence spectroscopy. Hemant Sharma, Hernández J. Guadalupe, Jayanthi Narayanan, Herbert Hofeld, Thangarasu Pandiyan, **Narinder Singh**, **Analytical Methods**, 2013, 5, 3880-3887.

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- **Talks/Invited Talks**

1. Invited Lecture delivered on 17th July 2010 for Teacher Training Programme sponsored by Punjab Techanical University at GGS College of Modern Technology, Kharar (15th -17th July 2010).
2. Invited Lecture delivered for UGC Sponsered National Seminar on “Importance of Solid/Solution State Techniques in Chemistry at Pt. Mohan Lal S. D. College (W),Gurdaspur (28th Aug. 2010).
3. Invited Lecture delivered for Science Congress at Jawahar Navodaya Vidyalaya, Sandhuian, Distt: Ropar (16th Nov. 2010).
4. Oral presentation for Prof. Ram Chand Paul International Conference on Emerging Trends in Chemistry at Panjab University, Chandigarh (11-12th February 2011).

5. Invited Lecture delivered at Khalsa College, Jalandhar on UGC Sponsored Seminar, (10th March 2012).
6. Invited Lecture delivered at SGGS, Khalsa College, Mahilpur on UGC Sponsored Seminar (25th Feb.2012).
7. Seminar presented on 6th Jan 2012, at Yonsei University, Wonju, S. Korea.
8. Invited Lecture delivered on National Symposium on Bionanotechnology at IIT Mandi (1st& 2nd June 2012).
9. Seminar presented on 26th June 2012, at UNAM Mexico
10. Invited Lecture delivered at Chandigarh University (19th Sep, 2013).
11. Invited Lecture delivered at Mata Gujri College, Fatehgarh Sahib (11 Oct, 2013)
12. Invited Lecture delivered at International Conference on Interdisciplinary Areas with Chemical Sciences (ICIACS 2013) organized by INST Mohali-PUChd (30 Oct -1st Nov 2013).
13. Invited Lecture delivered at a UGC sponsored National seminar at Swami Swatantranand Memorial College, Dinanagar (1-2 Feb 2014).
14. Invited Lecture delivered at National Seminar "Chemistry for a better Tomorrow: Current trends and Challenges" organized by Mata Gujri College, Fatehgarh Sahib (08/03/2014).
15. Invited Lecture delivered at a workshop organized by Khalsa college Jalandhar (30/8/14)
16. Invited Lecture delivered on National Science Day organized at Thapar University Patiala (28th Feb. 2015)
17. Invited Lecture delivered at International Conference "Asian Network for Natural & Unnatural Materials (ANNUM 3) organized by Department of Chemistry Panjab University Chandigarh (28th Feb to 2nd March 2, 2015)
18. Invited Lecture delivered at Department of Applied Science & Humanities RIMT-IET, Mandigobindgarh, (10/3/15)
19. Invited Lecture delivered at Prof. R. C. Paul symposium organized by Department of Chemistry Panjab University Chandigarh (20- 21st March, 2015).
20. Invited Lecture delivered at National Conference in Food Technology: Emerging Trends (NCFT-2015) organized by Chaudhary Devi Lal University, Sirsa (24-25 March, 2015).
21. Invited Lecture delivered at Industry Academia Expert Lecture week organized by PEC University of Technology Chandigarh (6-10 April 2015).