



Faculty Details proforma for DU Web-site

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cc: director@ducc.du.ac.in)

Title	Dr. (Ms)	First Name	Sandeep	Last Name	Kaur	Photograph
Designation		Assistant Professor				
Address Office		Office : Room No. 102, Block C , Multi-Storey building (1st floor) Department of Chemistry University of Delhi (North Campus) Delhi - 110007 India Lab : Room No. 119, Block C , Multi-Storey building (1st floor)				
Residence		-				
Phone No	Office	011-27666646				
	Residence	-				
	Mobile	-				
Email		skaur@chemistry.du.ac.in sandeepkaur.du@gmail.com				
Web-Page		http://people.du.ac.in/~skaur/				
Educational Qualifications						
Degree		Institution	Year	Details		
Ph.D.		IIT-Bombay	2007	Inorganic Chemistry Thesis topic : Mixed Valency and Valence State Distributions in Polynuclear Ruthenium Frameworks		
M.Phil. / M.Tech.		-	-	-		
M.Sc		Burdwan University	2002	Inorganic Chemistry Dissertation topic : Synthesis, Characterization and Properties of Mono-, Di- and Polynuclear Complexes of Cobalt, Copper and Cadmium. A Self-Assembly Approach		
B.Sc (Hons.)		Burdwan University	2000	Chemistry		
Any other qualification		-	-	-		
Career Profile						

1. Assistant Professor	University of Delhi, India	July 2010 – till date
2. Researcher	Leibniz Institute fur Catalyses, Rostock University, Germany (Study leave)	15 May 2018-14 May 2019
3. Max Planck-India Fellow	Max Planck Institute for Dynamics of Complex Technical Systems, Germany Recipient of <i>DST-Max Planck Fellowship</i> for this position	May–July 2016
4. Max Planck-India Fellow	Max Planck Institute for Dynamics of Complex Technical Systems, Germany Recipient of <i>DST-Max Planck Fellowship</i> for this position	May–June 2015
5. Max Planck-India Fellow	Max Planck Institute for Dynamics of Complex Technical Systems, Germany Recipient of <i>DST-Max Planck Fellowship</i> for this position	May–July 2014
6. Max Planck-India Fellow	Max Planck Institute for Dynamics of Complex Technical Systems, Germany Recipient of <i>DST-Max Planck Fellowship</i> for this position	June–July 2013
7. Visiting Scientist	Uppsala University, Sweden	June, 2012
8. Visiting Scientist	Uppsala University, Sweden	November, 2011
9. Post Doctoral Fellow	Uppsala University, Sweden Recipient of <i>Wenner-Gren Fellowship</i> for this position	April 2009 – July 2010
10. PostDoctoral Fellow	Stanford University, USA	January 2007 – January 2008
11. Visiting Researcher	Stuttgart University, Germany	June–July 2005

Administrative Assignments

1. Inorganic Section convener, Department of Chemistry, 2016-2017
2. Resident Tutor, Rajiv Gandhi Hostel for Girls, May 2011-Jan 2018
3. Bill Committee, Department of Chemistry, Jan 2015-2017
4. UV & Fluorimeter Committee, Department of Chemistry, Jan 2015-2017
5. Seminar Committee Member, Department of Chemistry, 2011-2012
6. FTIR Committee Member, Department of Chemistry, 2013-2014
7. Deputy Coordinator, Centralized Evaluation Center (CEC for M.Sc and M.Tech), Department of Chemistry, Nov-Dec, 2014
8. Member of Committee constituted to combat holi hooliganism, Department of Chemistry,

March-2015, 2016 & 2017

9. Member Department Grievance Committee for students, Jan 2016-present
10. Member Department Advisory committee for students, Aug 2018-present
11. Member Electro Chemical Work Station Committee for critical observation for purchasing the instrument, Department of Chemistry, Sep-2016

Areas of Interest / Specialization

Bioinorganic and Coordination Chemistry, Homogeneous Catalysis; Electrocatalysis, Designing model complexes as catalysts for proton reduction mimicking the hydrogenase active site, drug carriers, molecular sensors, etc; Electrocatalysis; Developing new class of metal complexes as possible models for the active site of metalloenzymes; Designing *Self-Assembled-Monolayers-SAMs*

Subjects Taught

1. M.Tech "Chemical Synthesis and Process Technologies", University of Delhi, July-Dec 2011

Semester I

(i) Course 103-Section B-Principles of Group Theory and its Applications in Spectroscopy

2. M.Sc (Previous), University of Delhi

Semester I : July-Dec, 2010 & 2011

(i) Course 101-Inorganic Chemistry- Section B : Supramolecular and Photoinorganic Chemistry

Semester I : July-Dec, 2012, 2013, 2014, 2015, 2016 & 2017

(i) Course 101-Inorganic Chemistry- Section A : Stability Constants of Complexes and their Applications

Semester I : July-Dec, 2010-2015

(ii) Inorganic Chemistry Practical

3. M.Sc (Previous), University of Delhi, Jan-June, 2011-2015

Semester II

(i) Course 201-Inorganic Chemistry- Section A : Group Theory and its Applications

(ii) Inorganic Chemistry Practical

4. M.Sc (Final), University of Delhi, Jan-June, 2016

Semester IV

(i) Course 4103 -Inorganic Chemistry- Section B : Analytical Techniques-Instrumentation & Applications

(ii) Inorganic Chemistry Practical including Project evaluation

5. M.Sc (Final), University of Delhi, Jan-June, 2017 & 2018

Semester IV

(i) Course 4101 -Inorganic Chemistry- Section A: Spectral Techniques in Inorganic Chemistry

(ii) Inorganic Chemistry Practical including Project evaluation

6. M.Sc (Final), University of Delhi, July-Dec, 2016 & 2017

Semester III

(i) Inorganic Chemistry Practical including Project evaluation

7. PhD Course Work, University of Delhi, Jan-June 2011

(i) Unit I : Analytical Techniques for Material Characterization

8. PhD Course Work, University of Delhi, Jan-June 2015, Sep 2016-June 2017 & Nov 2017-May 2018

(i) Unit VII : Applications of Molecular Symmetry and Group Theory

9. B.Tech (IIT-Bombay), 2004-2005

Inorganic Chemistry courses (CH 102, CH 115L)

Time table of the subjects taught during the current semester

On study leave from 15 May 2018 to 10 May 2019

Research Guidance

Supervised: 4

1. Mr. Indresh Kumar Pandey (Awarded, 2016)
2. Ms. Sandhya Mohan (Awarded, 2017)
3. Mr. M. Natarajan (Awarded, 2017)
4. Sarita Yadav (Awarded, 2018)

Supervision of Doctoral Thesis, under progress: 4

5. Hemlata Faujdar (2015)
6. Vishaka Kaim (2016)
7. Naveen Kumar (2016)
8. Tashika Aggarwal (2018)

Publications Profile

A. Research papers published in Refereed/Peer Reviewed Journals

Books

1. **Sandeep Kaur-Ghumaan**, A. Sakthivel, D. T. Masram, M. Sathiyendiran, Electronic and Magnetic Properties of Transition and Inner Transition Elements and Their Complexes, Nova Science Publishers (ISBN: 978-1-53610-914-6), April **2017**
2. Contributed to Biology a Global Approach-11th Edition by Campbell and co-authors (ISBN:9781292170435) (**2017**)
3. Contributed to Introductory Chemistry- 6th edition by Nivaldo J. Tro (ISBN-13: 978-0134302386) (**2018**)

2019

36. Nickel(II) PE1CE2P pincer complexes (E = O, S) for electrocatalytic proton reduction, **Sandeep Kaur-Ghumaan**,* P. Hasche, A. Spannenberg and T. Beweries*
Dalton Trans., **2019**, Under revision.
35. HER catalysed by iron complexes without a Fe₂S₂ core: A review, T. Agarwal and **Sandeep Kaur-Ghumaan**,
Coord. Chem. Rev. **2019**, Under revision.
34. Dinuclear Manganese Carbonyl Complexes: Electrocatalytic Reduction of Protons to Dihydrogen, V. Kaim, M. Natarajan and **Sandeep Kaur-Ghumaan***
ChemistrySelect, **2019**, *4*, 1789–1794.

2018

33. A tetranuclear iron complex: substitution with triphenylphosphine ligand and investigation into electrocatalytic proton reduction, M. Natarajan, V. Kaim, N. Kumar and **Sandeep Kaur-Ghumaan***
J. Chem. Sci. **2018**, *130*, 126 (Paper **Selected for cover page**)
32. Intramolecular stabilization of a catalytic [FeFe]-hydrogenase mimic investigated by experiment and theory, I. K. Pandey, M. Natarajan, H. Faujdar, F. Hussain, M. Stein* and **Sandeep Kaur-Ghumaan***
Dalton Trans. **2018**, *47*, 4941-4949.

2017

31. Highly stable Electrochromic device based on Organic-inorganic hybrid linked through a binding agent Solar Energy Materials and Solar Cells, Monika Jamdegni, **Sandeep Kaur-Ghumaan** and Amarjeet Kaur
Electrochimica Acta **2017**, *252*, 578-588.
30. Mononuclear Iron Carbonyl Complex [Fe(μ -bdt)(CO)₂(PTA)₂] with bulky phosphine ligand: A model for the [FeFe] hydrogenase enzyme active site with an inverted redox potential, M. Natarajan, Hemlata, S. M. Mobin, M. Stein and **Sandeep Kaur-Ghumaan***
Dalton Trans. **2017**, *46*, 10050–10056.
29. Synthesis and Electrocatalysis of Diiron Monothiolate Complexes: Small Molecule Mimics of the [FeFe] Hydrogenase Enzyme, M. Natarajan, I. K. Pandey and **Sandeep Kaur-Ghumaan***
ChemistrySelect **2017**, *2*, 1637-1644.

2016

28. Gd(III)-DO3A-SBMPP: An Effort to Develop the MRI Contrast Agent with Enhanced Relaxivity, S. Rangaswamy, R. Varshney, A. K. Tiwari, S. K. Sethi, B. S. H. Kumar, H. Ojha, **Sandeep Kaur-Ghumaan** and A. K. Mishra
ChemistrySelect **2016**, *1*, 6206-6211.
27. Diiron complexes [Fe₂(CO)₅(μ -pdt/Mebdt)(L)] containing a chelating Diphosphine ligand L=(Oxydi-2,1-phenylene)bis(diphenylphosphine): Bioinspired [FeFe] hydrogenase model complexes, I. K. Pandey, M. Natarajan, Hemlata, F. Hussain and **Sandeep Kaur-Ghumaan**,*
ChemistrySelect, **2016**, *1*, 5671 – 5678.

2015

26. Diiron benzenedithiolate complexes relevant to the [FeFe] hydrogenase active site, I. K. Pandey, S. M. Mobin, N. Diebel, B. Sarkar and **Sandeep Kaur-Ghumaan***
Eur. J. Inorg. Chem. **2015**, 2875-2882
25. 1,1'-Bis(Diphenylphosphino)Ferrocene Substituted Diiron Complexes Related to the Active Site of [FeFe]-Hydrogenases : Synthesis, Characterization and DFT Studies, **Sandeep Kaur-Ghumaan***, A. Sreenithya and R. B. Sunoj

J. Chem. Sci. **2015**, *127*, 557-563

24. Hydrogen generation : Aromatic dithiolate-bridged metal carbonyl complexes as hydrogenase catalytic site models, Indresh Kumar Pandey, Mookan Natarajan and **Sandeep Kaur-Ghumaan***

J. Inorg. Biochem. **2015**, *143*, 88-110

2014

23. [NiFe]hydrogenases: How close do structural and functional mimics approach the active site ?, **Sandeep Kaur-Ghumaan*** and M. Stein

Dalton Trans. **2014**, *43*, 9392-9405.

2013

22. Microbial Hydrogen Splitting in the Presence of Oxygen, M. Stein and **Sandeep Kaur-Ghumaan**

Biochem. Soc. Trans. **2013**, *41*, 1317-1324

21. Effect of Cyanide Ligands on the Electronic Structure of [FeFe] Hydrogenase Active Site Model Complexes with an Azadithiolate Ligand, Özlen F. Erdem, M. Stein, **Sandeep Kaur-Ghumaan**, E. J. Reijerse, S. Ott and W. Lubitz

Chem. Eur. J. **2013**, *19*, 14566-14572

2011

20. A model for the [FeFe] hydrogenase active site with a biologically relevant azadithiolate bridge: a spectroscopic and theoretical investigation", Ö. F. Erdem, L. Schwartz, M. Stein, A. Silakov, **Sandeep Kaur-Ghumaan**, P. Huang, S. Ott, E. J. Reijerse and W. Lubitz

Angew. Chem. Int. Ed. **2011**, *50*, 1439-1443

2010

19. Catalytic Hydrogen Evolution from Mononuclear Ferrous Carbonyl Complexes as Minimal Functional Models of the [FeFe] Hydrogenase Active Site, **Sandeep Kaur-Ghumaan**, L. Schwartz, R. Lomoth, M. Stein and S. Ott

Angew. Chem. Int. Ed. **2010**, *49*, 8033-8036

2008

18. Valence State Analysis via Spectroelectrochemistry in Differently Quinonoid Bridged Diruthenium Complexes [(acac)₂Ru(μ-L)Ru(acac)₂]ⁿ⁺ (n = +2, +1, 0, -1, -2), **Sandeep Ghumaan**, B. Sarkar, S. Maji, V. G. Puranik, J. Fiedler, F. A. Urbanos, R. Jimenez-Aparicio, W. Kaim and G. K. Lahiri

Chem. Eur. J. **2008**, *14*, 10816-10828

2007

17. Multiple one-electron oxidation and reduction of trinuclear bis (2,4-pentanedionato)ruthenium complexes with substituted diquinoxalino[2,3-a:2',3'-c]phenazine ligands, **Sandeep Ghumaan**, B. Sarkar, M. P. Patil, J. Fiedler, R. B. Sunoj, W. Kaim and G. K. Lahiri

Polyhedron **2007**, *26*, 3409-3418

16. Ancillary ligand determination of the spin location in both oxidised and reduced forms of diruthenium complexes bridged by bis-bidentate 1,4-bis(2-phenolato)-1,4-diazabutadiene, S. Kar, B. Sarkar, **Sandeep Ghumaan**, M. Leboschka, J. Fiedler, W. Kaim and G. K. Lahiri

Dalton Trans. **2007**, 1934-1938

15. Probing Mixed Valence in a New tppz-Bridged Diruthenium(III,II) Complex $\{(\mu\text{-tppz})[\text{Ru}(\text{bik})\text{Cl}]_2\}^{3+}$ (tppz = 2,3,5,6-Tetrakis(2-pyridyl)pyrazine, bik = 2,2'-Bis(1-methylimidazolyl)ketone): EPR Silence, Intervalence Absorption, and ν CO Line Broadening, M. Koley, B. Sarkar, **Sandeep Ghumaan**, E. Bulak, J. Fiedler, W. Kaim and G. K. Lahiri
Inorg. Chem. **2007**, *46*, 3736-3742

2006

14. 2,2'-dipyridylketone (dpk) as ancillary acceptor and reporter ligand in complexes $[(\text{dpk})(\text{Cl})\text{Ru}(\mu\text{-tppz})\text{Ru}(\text{Cl})(\text{dpk})]^{n+}$ where tppz 2,3,5,6-tetrakis(2-pyridyl)pyrazine, **Sandeep Ghumaan**, B. Sarkar, N. Chanda, M. Sieger, J. Fiedler, W. Kaim and G. K. Lahiri,
Inorg. Chem. **2006**, *45*, 7955-7961
13. An Experimental and Density Functional Theory Approach Towards the Establishment of Preferential Metal or Ligand Based Electron Transfer Processes in Large Quinonoid Bridged Diruthenium Complexes $[(\text{aap})_2\text{Ru}_2(\mu\text{-BL}^2)]^{n+}$, aap = 2-Arylazopyridine, **Sandeep Ghumaan**, S. Mukherjee, S. Kar, D. Roy, Shaikh M. Mobin, R. B. Sunoj and G. K. Lahiri
Eur. J. Inorg. Chem. **2006**, 4426-4441
12. 2,4,6-Tris(2-pyridyl)-1,3,5-triazine (tptz)-Derived $[\text{Ru}^{\text{II}}(\text{tptz})(\text{acac})(\text{CH}_3\text{CN})]^+$ and Mixed- Valent $[(\text{acac})_2\text{Ru}^{\text{III}}(\mu\text{-tptz-H}^+)\text{Ru}^{\text{II}}(\text{acac})(\text{CH}_3\text{CN})]^+$, **Sandeep Ghumaan**, Sanjib Kar, Shaikh M. Mobin, B. Harish, Vedavati G. Puranik and G. K. Lahiri
Inorg. Chem. **2006**, *45*, 2413-2423

2005

11. A New Coordination Mode of the Photometric Reagent Glyoxalbis(2-hydroxyanil) (H_2gbha): Bis-Bidentate Bridging by gbha^{2-} in the Redox Series $\{(\mu\text{-gbha})[\text{Ru}(\text{acac})_2]_2\}^n$ ($n = -2, -1, 0, +1, +2$), Including a Radical-Bridged Diruthenium(III) and a $\text{Ru}^{\text{III}}/\text{Ru}^{\text{IV}}$ Intermediate, S. Kar, B. Sarkar, **Sandeep Ghumaan**, D. Roy, F. A. Urbanos, J. Fiedler, R. B. Sunoj, R. Jimenez-Aparicio, W. Kaim and G. K. Lahiri
Inorg. Chem. **2005**, *44*, 8715-8722
10. 2,5-Dioxido-1,4-benzoquinonediimine (H_2L^{2-}), a hydrogen-bonding noninnocent bridging ligand related to aminated topaquinone: Different oxidation state distributions in complexes $[(\text{bpy})_2\text{Ru}_2(\mu\text{-H}_2\text{L})]^n$ ($n = 0, +, 2+, 3+, 4+$) and $[(\text{acac})_2\text{Ru}_2(\mu\text{-H}_2\text{L})]^m$ ($m = 2-, -, 0, +, 2+$), S. Kar, B. Sarkar, **Sandeep Ghumaan**, D. Janardanan, J. van Slageren, J. Fiedler, V. G. Puranik, R. B. Sunoj, W. Kaim and G. K. Lahiri
Chem. Eur. J. **2005**, *11*, 4901-4911
9. Sensitive Oxidation State Ambivalence in Unsymmetrical Three-Center (M/Q/M) Systems $[(\text{acac})_2\text{Ru}(\mu\text{-Q})\text{Ru}(\text{acac})_2]^n$, Q = 1,10-Phenanthroline-5,6-dione or 1,10-Phenanthroline-5,6-diimine ($n = +, 0, -, 2-$), **Sandeep Ghumaan**, B. Sarkar, S. Patra, J. van Slageren, J. Fiedler, W. Kaim and G. K. Lahiri
Inorg. Chem. **2005**, *44*, 3210-3214
8. 3,6-Bis(2'-pyridyl)pyridazine (L) and its deprotonated form (L-H^+) as ligands for $\{(\text{acac})_2\text{Ru}^{n+}\}$ or $\{(\text{bpy})_2\text{Ru}^{m+}\}$: investigation of mixed valency in $[(\text{acac})_2\text{Ru}_2(\mu\text{-L-H}^+)]^0$ and $[(\text{bpy})_2\text{Ru}_2(\mu\text{-L-H}^+)]^{4+}$ by spectroelectrochemistry and EPR, **Sandeep Ghumaan**, B. Sarkar, S. Patra, K. Parimal, J. van Slageren, J. Fiedler, W. Kaim, G. K. Lahiri
Dalton Trans. **2005**, 706-712
7. Isomeric ruthenium terpyridine complexes $[\text{Ru}(\text{trpy})(\text{L})\text{Cl}]^{n+}$ containing the unsymmetrically bidentate acceptor L = 3-amino-6-(3,5-dimethylpyrazol-1-yl)-1,2,4,5-tetrazine. Synthesis, structures, electrochemistry, spectroscopy and DFT calculations, S. Patra, B. Sarkar, **Sandeep Ghumaan**, M. P. Patil, S. M. Mobin, R. B. Sunoj, W. Kaim

and G. K. Lahiri
Dalton Trans. **2005**, 1188-1194

6. Tetrazine derived mononuclear $Ru^{II}(acac)_2(L)$ (1), $[Ru^{II}(bpy)_2(L)](ClO_4)_2$ (2) and $[Ru^{II}(bpy)(L)_2](ClO_4)_2$ (3) (L = 3-amino-6-(3,5-dimethylpyrazol-1-yl)-1,2,4,5-tetrazine, acac = acetylacetonate, bpy = 2,2'-bipyridine): syntheses, structures, spectra and redox properties, A. Nayak, S. Patra, B. Sarkar, **Sandeep Ghumaan**, V. G. Puranik, W. Kaim and G. K. Lahiri
Polyhedron **2005**, 24, 333-342

2004

5. Isovalent and Mixed-Valent Diruthenium Complexes $[(acac)_2Ru^{II}(\mu-bpytz)Ru^{II}(acac)_2]$ and $[(acac)_2Ru^{II}(\mu-bpytz)Ru^{III}(acac)_2](ClO_4)$ (acac = Acetylacetonate and bpytz = 3,6-Bis(3,5-dimethylpyrazolyl)-1,2,4,5-tetrazine): Synthesis, Spectroelectrochemical, and EPR Investigation, S. Patra, B. Sarkar, **Sandeep Ghumaan**, J. Fiedler, W. Kaim and G. K. Lahiri
Inorg. Chem. **2004**, 43, 6108-6113
4. The triruthenium complex $[(acac)_2Ru^{II}]_3(L)$ containing a conjugated diquinoxaline[2,3-f:2',3'-h]phenazine (L) bridge and acetylacetonate (acac) as ancillary ligands. Synthesis, spectroelectrochemical and EPR investigation, S. Patra, B. Sarkar, **Sandeep Ghumaan**, J. Fiedler, W. Kaim and G. K. Lahiri
Dalton Trans. **2004**, 754-758
3. $\{(\mu-L)[Ru^{II}(acac)_2]_n\}$, n = 2+, +, 0, -, 2-, with L = 3,3',4,4'-tetraimino-3,3',4,4'-tetrahydrobiphenyl. EPR-supported assignment of NIR absorptions for the paramagnetic intermediates, S. Patra, B. Sarkar, **Sandeep Ghumaan**, J. Fiedler, S. Zalis, W. Kaim and G. K. Lahiri
Dalton Trans. **2004**, 750-753

B. Other Research papers published

2006

2. Tuning intermetallic electronic coupling in polyruthenium systems via molecular architecture.
Sandeep Ghumaan, and G. K. Lahiri
J. Chem. Sc. **2006**, 118, 537-545

2005

1. Mixed valency in polyruthenium systems: Diverse effects of ancillary and bridging functionalities.
Sandeep Ghumaan and G. K. Lahiri
Abstracts of Papers, 229th ACS National Meeting, San Diego, CA, United States, March 13-17, **2005**, INOR-827

C. Research papers yet to be published

Publications in the Last one year

Books

1. **Sandeep Kaur-Ghumaan**, A. Sakthivel, D. T. Masram, M. Sathiyendiran, Electronic and Magnetic Properties of Transition and Inner Transition Elements and Their Complexes, Nova Science Publishers (ISBN: 978-1-53610-914-6), April 2017
2. Contributed to Biology a Global Approach-11th Edition by Campbell and co-authors (ISBN:9781292170435) (**2017**)
3. Contributed to Introductory Chemistry- 6th edition by Nivaldo J. Tro (ISBN-13: 978-0134302386)

(2018)

2019

36. Nickel(II) PE1CE2P pincer complexes (E = O, S) for electrocatalytic proton reduction, **Sandeep Kaur-Ghumaan**,* P. Hasche, A. Spannenberg and T. Beweries*
Dalton Trans., **2019**, Under revision.
35. HER catalysed by iron complexes without a Fe₂S₂ core: A review, T. Agarwal and **Sandeep Kaur-Ghumaan**,
Coord. Chem. Rev. **2019**, Under revision.
34. Dinuclear Manganese Carbonyl Complexes: Electrocatalytic Reduction of Protons to Dihydrogen, V. Kaim, M. Natarajan and **Sandeep Kaur-Ghumaan***
ChemistrySelect, **2019**, *4*, 1789–1794.

2018

33. A tetranuclear iron complex: substitution with triphenylphosphine ligand and investigation into electrocatalytic proton reduction, M. Natarajan, V. Kaim, N. Kumar and **Sandeep Kaur-Ghumaan***
J. Chem. Sci. **2018**, *130*, 126 (Selected for cover page).
32. Intramolecular stabilization of a catalytic [FeFe]-hydrogenase mimic investigated by experiment and theory, I. K. Pandey, M. Natarajan, H. Faujdar, F. Hussain, M. Stein* and **Sandeep Kaur-Ghumaan***
Dalton Trans. **2018**, *47*, 4941-4949.

Conference Organization/ Presentations (in the last 3 years)

- 1. Attended: Dr. Sandeep Kaur-Ghumaan, 17th Ferrocene Colloquim**, Universitat Rostock, Germany, Feb-2019.
- 2. Talk: Dr. Sandeep Kaur-Ghumaan**, “*Designing and developing alternative renewable energy resources*”, Global Young Academy International Conference of Young Scientists and Anniversary Annual General Meeting at the German National Academy of Sciences-Leopoldina Halle (Saale), Germany, 29 April – 3 May 2019.
- 3. Poster: Dr. Sandeep Kaur-Ghumaan**, P. Hasche and T. Beweries, “*Electrocatalytic proton reduction by PXCXP (X, X = O, O: O, S; S, S) Ni(II) pincer complexes*”, Hanse Chemistry Symposium, Leibniz Institute for Catalysis (LIKAT), Rostock, Germany, Nov-2018.
- 4. Poster: T. Agarwal and Dr. Sandeep Kaur-Ghumaan**, “*4-methylbenzene thiolate-bridged and 1,3,5-triaza-7-phosphaadamantane substituted Fe₂S₂ core: Electrocatalytic hydrogen evolution studies*”, 17th Prof. K.V. Thomas Endowment Seminar & International symposium on **New Trends in Applied Chemistry (NTAC-2019)**, Dept. of Chemistry, Sacred Heart College, Kochi, January-2019.
- 5. Poster: V. Kaim, M. Natarajan, R. L. Kumawat, Md. Ehesan Ali and Dr. Sandeep Kaur-Ghumaan**, “*Mononuclear Ruthenium Phosphine Complexes: Synthesis, characterization and DFT calculations*”, 17th Prof. K.V. Thomas Endowment Seminar & International symposium on **New Trends in Applied Chemistry (NTAC-2019)**, Post Graduate & Research Department of Chemistry, Sacred Heart College (Autonomous), Thevera, Kochi, India, January-2019.

6. **Poster:** V. Kaim, M. Natarajan and **Dr. Sandeep Kaur-Ghumaan**, “*Electrochemical Proton Reduction Catalyzed by Thiolate-Bridged Manganese Carbonyl Complexes*” **National Conference on Chemical Sciences: Opportunities & Challenges**, St. Stephen College, University of Delhi, March-2018.
7. **Poster:** Hemlata, M. Natarajan and **Dr. Sandeep Kaur-Ghumaan**, “*Mononuclear Iron Carbonyl Complex $[Fe(\mu\text{-}bdt)(CO)_2(PTA)_2]$ with bulky phosphine ligand: A model for the $[FeFe]$ hydrogenase enzyme active site with an inverted redox potential*”, Modern Trends in Inorganic Chemistry (MTIC- XVII), CSIR -NCL, IISER – PUNE, December- 2017.
8. **Poster:** Hemlata and **Dr. Sandeep Kaur-Ghumaan**, “*Monothiolate versus Dithiolate-Bridged $\{2Fe-2S\}$ Model Complexes with a Diphosphine Ligand*” **2nd International Conference on Electrochemical Science and Technology (ICONEST-2017)**, J. N. Tata Auditorium, IISc-Bangalore, India, August-2017.
9. **Poster:** Vishakha Kaim, M. Natarajan and **Dr. Sandeep Kaur-Ghumaan**, “*Electrocatalytic Production of Hydrogen by Manganese Imidazole Complexes: A Renewable and Sustainable Source of Energy*,” **Green Chemistry New Zealand 2017**, University of Auckland, New Zealand, December-2017.
10. **Talk:** **Dr Sandeep Kaur-Ghumaan**, “*Bioinspired Model Complexes Mimicking the $[FeFe]$ Hydrogenase Enzyme Active Site: An Alternative Energy Resource*”, **Thematic Conference in Chemical Sciences (TC²S) – 2017: Sustainable Chemistry**, Department of Chemistry, IIT Ropar, May-2017
11. **Talk:** **Dr Sandeep Kaur-Ghumaan**, “*Biomimetic versus bioinspired hydrogen converting systems*”, 5th Symposium on Advanced Biological Inorganic Chemistry (SABIC), the Stadel, **Kolkata**, organized by IACS Jadavpur and TIFR, Mumbai, 7-11, Jan 2017.
12. **Talk:** Sarita Yadav and **Dr Sandeep Kaur-Ghumaan**, “*Dinuclear silver (I) metallacycles with free functionalized thiophenyl / thiomethyl units*”, National Conference on Clean & Green Energy: The Chemical and Environmental Aspects (NCGE2017), by Department of Chemistry, Bhaskaracharya College of Applied Sciences, University of Delhi in association with UGC, February 16-17, 2017.
13. **Talk:** Hemlata and **Dr Sandeep Kaur-Ghumaan**, “*Mono- and Dithiolate complexes as $[FeFe]$ hydrogenase mimics: An alternative renewable energy source*”, National Conference on Clean & Green Energy: The Chemical and Environmental Aspects (NCGE2017), by Department of Chemistry, Bhaskaracharya College of Applied Sciences, University of Delhi in association with UGC, February 16-17, 2017.
14. **Talk:** M. Natarajan and **Dr Sandeep Kaur-Ghumaan**, “*Bioinspired model complexes mimicking the $[FeFe]$ hydrogenase enzyme active site*”, National Conference on Clean & Green Energy: The Chemical and Environmental Aspects (NCGE2017), by Department of Chemistry,

Bhaskaracharya College of Applied Sciences, University of Delhi in association with UGC, February 16-17, 2017.

15. **Talk: Dr Sandeep Kaur-Ghumaan**, "*Hydrogen Production using Iron-based Molecular Catalysts*" FUB-DU Joint Research Workshop on Supramolecular Chemistry and Nanoscale Systems, **Freie Universität Berlin, Germany** Takustr. 3, SR 31.09, June 8-10, 2016
16. **Invited Talk: Dr Sandeep Kaur-Ghumaan**, "*Iron Thiolate Complexes as Hydrogen Converting Systems: Synthesis and Characterization by Experiment and Theory*", **Symposium on Frontiers in Inorganic and Organometallics**, School of Chemistry, **IIT Indore**, April-2016
17. **Invited Talk: M. Stein and Dr Sandeep Kaur-Ghumaan***, "*Bioinspired versus Biomimetic Hydrogen Converting Systems: Synthesis and Characterization by Experiment and Theory*", **Indo-German workshop on "The Advances in Materials, Reaction, and Separation Processes**, Department of Chemical Engineering, **IIT Guwahati**, February-2016
18. **Poster: Hemlata, I. K. Pandey, M. Natarajan, Sandeep Kaur-Ghumaan**, "*Diiron monothiolate carbonyl complex with chelating phosphine ligand: proton reduction catalyst*," **1st National Conference on emerging trends and future challenges in chemical sciences (ETFC)**, 3-4 Feb 2016 by Department of Chemistry, **Kirori Mal College, University of Delhi**
19. **Poster: Dr Sandeep Kaur-Ghumaan**, "*Structural and Functional Mimics of the [FeFe] Hydrogenase Enzyme Active Site*", **18th CRSI National Symposium in Chemistry**, Punjab University Chandigarh, February-2016
20. **Poster: Hemlata, Indresh Pandey, M Natarajan and Dr Sandeep Kaur-Ghumaan**, "*Diiron Monothiolate Carbonyl Complex with Chelating Diphosphine Catalyzing Hydrogen Evolution*", **18th CRSI National Symposium in Chemistry**, Punjab University Chandigarh, February-2016
21. **Poster: Hemlata, Indresh K. Pandey, M. Natarajan and Dr Sandeep Kaur-Ghumaan**, "*[Fe₂(CO)₄(μ-naphthalene-2-thiolate)₂(μ-dppe)] Complex as a Proton Reduction Catalyst: Model for the [FeFe] Hydrogenase Enzyme*", **DU-JAIST Indo-Japan Symposium on Chemistry of Functional Molecules / Materials**, Department of Chemistry, **University of Delhi**, February-2016
22. **Poster: Hemlata, Indresh K. Pandey, M. Natarajan and Dr Sandeep Kaur-Ghumaan**, "*Naphthalene thiolate-Bridged Complex as an [FeFe] Hydrogenase Mimic: An Alternative Renewable Energy Source*", **International Conference on Materials Science & Technology**, Conference Centre, **University of Delhi**, March-2016

Research Projects (Major Grants/Research Collaboration)

1. Project Title :	Bioinorganic Enzyme Active Site Models of Energy Relevance – Synthesis, Characterization and their Catalytic Studies
Period :	1 year
Funding Agency :	<i>University of Delhi</i>
Grant :	Rs. 2.5 lacs (2010, 2011, 2012), Rs. 2.8 lacs (2013), Rs. 2.7 lacs (2014) & Rs. 2,80,000/- (2015)
2. Project Title :	Mixed Valence Aspects of Mono- and Dinuclear η^6 -Arene Ruthenium Complexes with Oxygen- and Nitrogen- Based Chelating Ligands: Synthesis and Characterization
Period :	3 years (2015-2018)
Funding Agency :	CSIR
Grant :	Rs. 5 lacs
3. Project Title :	Bioinspired Model Complexes Mimicking the Active Site of the [Fe]-only Hydrogenase Enzymes
Period :	3 years (2012-2015)
Funding Agency :	<i>DST-SERB</i>
Grant :	Rs. 36 lacs
4. Project Title :	Macrocycles as Catalysts, Drug/Drug Carriers and Corrosion Inhibitors
Period :	1st year (2014-2015)
Funding Agency :	DU-DST Purse grant
Grant :	Rs. 2,21,360/-
5. Project Title :	Macrocycles as Catalysts, Drug/Drug Carriers and Corrosion Inhibitors
Period :	2 nd year (2016-2017)
Funding Agency :	DU-DST Purse grant
Grant :	Rs. 2,48,101/-
6. Project Title :	Design, Synthesis and Characterization of Earth-Abundant Metal Complexes (Co, Fe, Ni) as Electrocatalysts for Proton Reduction
Period :	3 years (2018-2021)
Funding Agency :	CSIR
Grant :	Rs. 15,75,000/-
Awards and Distinctions	
1. CSIR Travel Grant for attending international conference in Singapore, July- 2014	
2. Max-Planck India Fellowship , from DST & Max Planck Group for Research in Max Planck	

Institute for Dynamics of Complex Technical Systems, Magdeburg-Germany (2012-2016)

3. **Indo-US Research Fellowship**, from Indo-US Science & Technology Forum (IUSSTF) for Research in Pacific Northwest National Laboratory (2011) (**Not availed**)
4. **Wenner Gren Stiftelserna (Fellowship)**, from Wenner Gren Foundations-Sweden for Postdoctoral Research (2010)
5. **Best Paper award** (given by the Royal Society of Chemistry, West India section) at the **17th Research Scholars Meet** (11th-12th February, 2005), organised by the Indian Chemical Society at K. J. Somaiya College, Mumbai
6. Teaching Assistantship for undergraduate Inorganic Chemistry courses by IIT-Bombay, **2004-2005**
7. Travel award from CSIR and DST New Delhi, India for attending the **229th American Chemical Society (ACS) Meeting**, San Diego, California, USA, March – **2005**
8. Awarded **Senior Research Fellowship** by the Council of Scientific and Industrial Research (CSIR), Govt. of India, New Delhi in **2004**
9. Awarded **Junior Research Fellowship** by the Council of Scientific and Industrial Research, Govt. of India, New Delhi in **2002**
10. Qualified all India level Graduate Aptitude Test in Engineering (**GATE-2002**) with **97.66** percentile
11. **Burdwan University Gold Medal** for standing first in M.Sc examination (**2000-2002**)
12. **Dr. Panchanan Roy & Late Surendra Kr. Roy Prize** for securing highest marks in M.Sc examination (Burdwan University, **2000-2002**)
13. **Gouri Kanta Mukherjee Memorial Gold** for securing highest marks in M.Sc examination (Burdwan University, **2000-2002**)
14. **National Scholarship (2000 - 2001)**

Association With Professional Bodies

Memberships:

1. Member, Global Young Academy, Halle, Germany (2019-2024)
2. Materials Research Society of India, Bangalore Life member (2014)
3. Catalysis Society of India, Chennai Life member (2014)
4. Indian Council of Chemists, Agra Life member (2014)
5. American Chemical Society member since 2004-present
6. Royal Society of Chemistry member since 2013-present
7. International Union for Pure and Applied Chemistry (IUPAC) member since Jan 2014-Dec 2015
8. Chemical Research Society of India (CRSI) Life member (2013)
9. Indian Science Congress Association, Kolkata Life member (2014)
10. Indian Chemical Society, Kolkata Life Member (2014)
11. Indian Society of Chemists and Biologists Life Member (2014)

Other Activities

1. **2nd prize Poster presentation:** **V. Kaim**, M. Natarajan and S. Kaur-Ghumaan*, Electrochemical Proton Reduction Catalysed by Thiolate-Bridged Manganese Carbonyl Complexes, National Conference On Chemical Sciences: Opportunities & Challenges March-2018, Organized by Dept. of Chemistry, ST. STEPHEN'S COLLEGE, Univ. of Delhi, India
2. Development of e-learning material, Instrumental Methods and Analysis in Forensic Sciences: Conductometric measurements (PG level), Epathshala, GAD TLC, SGTB Khalsa College, DU, **2016**
3. Paper setter for Department of Chemistry, University of Delhi, Ph.D entrance exam, June **2017**
4. Advisory Committee member, 1st national Conference on Emerging trends and Future challenges in chemical sciences (**ETFC-2016**), Department of Chemistry, Kirori Mal College, University of Delhi
5. DST-Inspire Jury member at the national level, **2012, 2013, 2014, 2015 & 2016**
6. Summer internship guidance to M.Sc and B.Tech students from DU and outside DU May- July, **2015, 2016 & 2017** (Area: Hydrogenases and their model complexes)
7. Summer Internship in Laboratory Research in 2016 by Centre for Science Education and Communication, for UG students from DU Colleges, University of Delhi. Pragya Arora, B.Sc 2nd Year student, Shivaji College, was selected for working in our laboratory, from **16th June-5th July 2016** (Area: Synthesis of Supramolecular Ligands)
8. International training programme on leadership and career development for women scientists/technologists, sponsored by Department of Science and Technology Government of India, New Delhi & Indo US Science and Technology Forum, New Delhi (DST-IUSSTF), 28th August – 1st September, **2015** at **Indian Institute of Science Education and Research, Pune**
9. Invigilator for Ph.D Chemistry Entrance Examination, 23rd Aug **2014**
10. Attended Faculty Empowerment workshop on Basic ICT skills at Guru Angad Dev Teaching Learning Center of MHRD, **SGTB Khalsa College, DU** (17 and 19 Sep, **2016**)
11. Department of Chemistry, Antardhvani-2015 team member for coordinating departmental activities (organized by University of Delhi in February, **2015**)
12. Attended Orientation programme (**OR-75**) at CPDHE, University of Delhi, **2013**
13. Attended Refresher course in Chemistry by CPDHE, at Department of Chemistry, University of Delhi, June, **2015**
14. Expert member in the Selection Committee for the post of Scientific Officer (Inorganic Chemistry) at Pharmacopoeia Commission for Indian Medicine & Homoeopathy, Department of AYUSH, Ministry of Health & Family Welfare, Govt. of India, Nov-**2014**
15. Paper setter for Uttarakhand State Eligibility Test for Lectureship (SET) conducted by Kumaun University, Feb-**2015**
16. Evaluator for project Udaan launched by CBSE, Feb-March **2015**
17. Reviewer of several journals



Dr Sandeep Kaur (24.06.2019)

Signature of Faculty Member

- You are also requested to also give your complete resume as a DOC or PDF file to be attached as a link on your faculty page.