

# **THE 95<sup>th</sup> ANNUAL REPORT**

**University of Delhi**

**Department of Chemistry**

**Faculty of Science**

## **Major Activities and Achievements**

The Department of Chemistry is one of the premier research Departments in the country. The spectrum of research areas is broad spanning from experimental to theoretical and computational studies on bio-organic chemistry, chemical biology, coordination chemistry, electrochemistry, green chemistry, material chemistry, medicinal chemistry, natural products, nano-chemistry, polymers, synthetic chemistry etc. Faculty members in the last one year have published more than 230 research papers in peer reviewed journals of high impact and awarded 53 Ph.D. Department has arranged several memorial and oration award lectures, and also other regularly held colloquia by eminent speakers. These lectures were well received by Ph.D. and postgraduate students and imparted advance knowledge of the contemporary research topics. Apart from collaborating with international experts our faculty members are invited to share their novel research findings through keynote, plenary and invited lectures in various National and International Conferences and Institutions. The extramural research projects that are secured by our Faculty facilitate in developing and upgrading the state-of-the-art laboratory facilities and in training young research scholars. Many faculty members have been conferred by prestigious medals, honors and one faculty member is Fellow of Indian Academy of Science. Department imparted M.Sc. teaching and training in advanced areas of Chemistry.

## Honours/Distinctions

**Prof. R. Chandra:** 105th Indian Science Congress Millennium Plaques of Honour award, 2017-18.

**Prof. Rama Kant:** Elected Member of CRSI Council (2017-2020)

**Prof. Rama Kant:** Acharya J. C. Ghosh Memorial Medal (2016) of Indian Chemical Society

## Publications

### Journals

Agarwal, D., Gupta, R. D. & Awasthi, S. K. (2017). Are antimalarial hybrid molecules a close reality or a distant dream? *Antimicrobial Agents Chemother*, 61, e00249.

Aggarwal, K. & Khurana, J. M. (2017). Synthesis and Application of a Novel Indenoquinoline Dione Conjugate as A Dual Fluorescent and Colorimetric pH Sensor. *Journal of Luminescence*, 187, 457-465.

Aggarwal, L. & Biswas, P. (2018). Hydration Water Distribution around Intrinsically Disordered Proteins. *The Journal of Physical Chemistry B*, 122, 4206–4218.

Aggarwal, P., Sharma, S., Kaur, H., Singh, S. & Hazra, R. K. (2017). Exact spectra of strong coulomb correlations of 3-D 2-e harmonic dots in magnetic field. *Physica E: Low- dimensional Systems and Nano-structures*, 85, 56-64.

Aggarwal, P., Sharma, S., Singh, S., Kaur, H. & Hazra, R. K. (2017). Exact e-e (exchange) correlations of 2-D quantum dots in magnetic field: Size extensive N =3, 4,, n-electron systems via multi-pole expansion. *Physica E: Low-dimensional Systems and Nano-structures*, 88, 26-34.

Agarwal, S., Kidwai, M., Poddar, R. & Nath, M. (2017). A facile and green approach for the one-pot multicomponent synthesis of 2,4,5-triaryl- and 1,2,4,5-tetraarylimidazoles by using zinc-proline hybrid material as a catalyst. *ChemistrySelect*, 2, 10360–10364.

Ahmed, S., Kaushik, M., Chaudhary, S. & Kukreti, S. (2018). Structural polymorphism of a cytosine-rich DNA sequence forming i-motif structure: Exploring pH based biosensors. *International Journal of Biological Macromolecules*, 111, 455-461.

Arora, G., Yadav, M., Gaur, R., Gupta, R. & Sharma, R. K. (2017). A Novel and Template-Free Synthesis of Multifunctional Double-Shelled Fe<sub>3</sub>O<sub>4</sub>-C Nanoreactor as an Ideal Support for Confined Catalytic Reactions. *Chemistry Select*, 2, 10871-10879.

Arora, R., Issar, U. & Kakkar, R. (2018) In silico study of the active site of Helicobacter pylori urease and its inhibition by hydroxamic acids. *Journal of Molecular Graphics & Modelling*, 83, 64-73.

Arora, R., Issar, U. & Kakkar, R. (2017). Theoretical study of the molecular structure and intramolecular proton transfer in benzohydroxamic acid. *Computational & Theoretical Chemistry*, 1105, 18-26.

Arora, R. & Kakkar, R. (2017). Negative Ion Wolff rearrangement of some diazoketones: A theoretical mechanistic study. *Computational & Theoretical Chemistry*, 1106, 50-57.

Arora, R., Kashyap, K. & Kakkar, R. (2018). Rearrangements in radical cations of diazoketones: A DFT mechanistic study. *Computational & Theoretical Chemistry*, 1134, 30-36.

Arya, G., Kumari, M., Gupta, N., Kumar, A., Chandra, R. & Nimesh, S. (2017). Green synthesis of silver nanoparticles using *Prosopis juliflora* bark extract: reaction optimization, antimicrobial and catalytic activities. *Artificial Cells Nanomedicine Biotechnology*, 18, 1-9.

Arya, G., Sharma, N., Ahmed, J., Gupta, N., Kumar, A., Chandra, R. & Nimesh, S. (2017). Degradation of anthropogenic pollutant and organic dyes by biosynthesized silver nano-catalyst from *Cicer arietinum* leaves. *Journal of Photochemistry and Photobiology B: Biology*, 174, 90-96.

Badhani, B. & Kakkar, R. (2017). DFT study of structural and electronic properties of gallic acid and its anions in gas phase and in aqueous solution. *Structural Chemistry*, 28(6), 1789-1802.

Badhani, B. & Kakkar, R. (2018). Structural, electronic, and reactivity parameters of some triorganotin(IV) carboxylates: a DFT analysis. *Structural Chemistry*, 29(3), 753-763.

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Bansal, D. & Gupta, R. (2017). Hydroxide-bridged Dicopper Complexes: The Influence of Secondary Coordination Sphere on Structure and Catecholase Activity. *Dalton Transactions*, 46, 4617 – 4627.

Bartwal, G., Aggarwal, K. & Khurana, J. M. (2018). An Ampyrone based azo dye as pH-responsive and chemo-reversible colorimetric fluorescent probe for  $Al^{3+}$  in semi-aqueous medium: Implication towards logic gate analysis. *New Journal of Chemistry*, 42, 2224-2231 .

Bartwal, G., Saroha, M. & Khurana, J. M. (2018). Nickel boride mediated chemoselective deprotection of 1,1-diacetates to aldehydes and deprotection with concomitant reduction to alcohols at ambient temperature. *Synthetic Communication*, 48, 97-103.

Basu, S. & Biswas, P. (2018). Salt-bridge dynamics in intrinsically disordered proteins: A trade-off between electrostatic interactions and structural flexibility. *Biochimica et Biophysica Acta (BBA) - Proteins and Proteomics*, 1866, 624-641.

Bishnoi, S., Milton, M. D., Paul, T. K., Pal, A. K., Taraphder, S. (2017). Small non-planar phenothiazine-5-oxide-based molecules: structural characterization, photophysical, thermal and computational studies. *ChemistrySelect*, 2, 3084-3092.

Bisht, M., Mondal, D., Pereira, M.M., Mara, G. F., Venkatesu, P. & Coutinho, J. A. P. (2017). Long-term protein packaging in cholinium-based ionic liquids: Improved catalytic activity and enhanced stability of cytochrome C against multiple stresses. *Green Chemistry*, 19, 4900-4911.

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Bragta, P., Sidhu, R. K., Jyoti, K., Baldi, A., Jain, U. K., Chandra, R. & Madan, J. (2018). Intratumoral administration of carboplatin bearing poly ( $\epsilon$ -caprolactone) nanoparticles amalgamated with in situ gel tendered augmented drug delivery, cytotoxicity, and apoptosis in melanoma tumor. *Colloids and Surfaces B: Biointerfaces*, 166, 339-348.

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Chauhan, H., Singh, M. K., Kumar, P., Hashmi, S. A. & Deka, S. (2017). Development of  $\text{SnS}_2$ /RGO nanosheets composite for cost-effective aqueous hybrid supercapacitors. *Nanotechnology*, 28, 25401.

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Dutta, S., Sharma, S., Sharma, A. & Sharma, R. K. (2017). Fabrication of Core-Shell-Structured Organic-Inorganic Hybrid Nanocatalyst for the Expedient Synthesis of Polysubstituted Oxazoles via Tandem Oxidative Cyclization Pathway. *ACS Omega*, 2, 2778-2791.

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Gulati, U., Rajesh, U. C., Bunekar, N., Rawat, D.S. (2017). Decarboxylative coupling strategy to afford N-heterocycles driven by silica nanosphere embedded copper oxide (Cu@SiO<sub>2</sub>-NS). *ACS Sustainable Chemistry & Engineering*, 5, 4672-4682.

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Yadav, G. D., Deepa, & Singh, S. (2017). 1,4-Diazabicyclo[2.2.2]octane Trifluoroacetate: A Highly Efficient Organocatalyst for the Cyanosilylation of Carbonyl Compounds under Solvent Free Condition. *ChemistrySelect*, 2, 4830.

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Yadav, N., Agarwal, D., Dixit, A. K., Gupta, R. D., Awasthi, S. K. (2018). In vitro antiplasmodial efficacy of synthetic coumarin-triazole analogs. *European Journal of Medicinal Chemistry*, 145, 735-745.

Yadav, P., Kumar, B., Gautam, H.K., Sharma, S.K. (2017). Synthesis and Antibacterial Activity Screening of Quaternary Ammonium Derivatives of Triazolylpyranochromenones. *Journal of chemical sciences*, 129 (2), 211-222.

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#### **Book :**

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#### **Book Chapters:**

Kashyap, K., Kakkar, R. (2017). Herpesvirus Proteases & Their Inhibitors. *Viral Proteases & Their Inhibitors*. (Eds.), *Saty P. Gupta Academic Press*. (pp. 411-440).

Kakkar, R. (2017). In Silico Design of PDHK Inhibitors: From Small Molecules to Large Fluorinated Compounds. *Computational Chemistry Methodology in Structural Biology and Materials Sciences*. (Eds.), Tanmoy Chakraborty, Prabhat Ranjan, Anand Pandey. *Apple Academic Press (CRC Press) Taylor & Francis*.

Kakkar, R., Bhandari, M. (2017). Pyruvate Dehydrogenase Kinases (PDHKs) and their Inhibition: A Possible Line of Treatment for Diabetes, Heart Ischemia and Cancer. *Advances in Studies on Enzyme Inhibition, Miscellaneous Drugs*. (Eds.), S. P. Gupta. *Nova Science Publishers: New York*. 2, (pp. 91-112).

Kaur, G., Grewal, J., Jyoti, K., Jain, U. K., Chandra, R., Madan, J. (2017). Oral controlled and sustained drug delivery systems: Concepts, advances, preclinical, and clinical status in Drug Targeting and Stimuli Sensitive Drug Delivery Systems. *William Andrew Applied Science Publishers* (pp. 567-626).

Khanna, M., Agrawal, N., Dhawan, G. & Chandra, R. (2017). Influenza pandemics and the associated bacterial infections. *Austin Publishing Group*.

Kumar, P., Kaur, S., Gupta, R., & James, K. B. (2018). Pincers Based on Dicarboxamide and Dithiocarboxamide Functional Groups; Chapter – 14; (Eds.), *David Morales-Morales; Elsevier* (pp. 295-325).

Kumari R. M., Sharma, N., Gupta, N., Chandra, M. & Nimesh, S. (2018). *Synthesis and evolution of polymeric nanoparticles: Development of an improved gene delivery system, Design and Development of New Nanocarriers*, Chapter 11, (pp. 401-438).

Masram, D. T., Kumar, M., Mogha, N. (2017). Case Studies in Biosorption. *Bioremediation: Current Research and Applications*, (pp. 201-225).

Sakharkar, M. K., Rajamanickam, K., Babu, C. S., Madan, J., Chandra, R., Yang, J. (2018). Preclinical: Drug Target Identification and Validation in Human” chapter 20665 *Encyclopedia of Bioinformatics and Computational Biology*. doi: 10.1016/B978-0-12-811414-8.20665-2.

Sengar, V., Jyoti, K., Jain, U. K., Katare, O. P., Chandra, R., Madan, J. (2017). Lipid nanoparticles for topical and transdermal delivery of pharmaceuticals and cosmeceuticals: A glorious victory in Lipid Nanocarriers for Drug Targeting . Elsevier, William Andrew Applied Science Publishers, (pp. 413-437).

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Singh, P., Kumari, K., Vishvakrma, V. K., Mehrotra, G. K., Chandra, R., Kumar, D., Patel, R. & Shahare, V. Y. (2017). Metals Nps (Au, Ag and Cu): Synthesis, stabilization and their role in green chemistry and drug delivery, *Green Technologies and Environmental Sustainability*, (pp. 309-337).

Tomar, V., Mazumder, M., Chandra, R., Yang, J., Sakharkar, M. K. (2018). Small Molecule Drug Design Encyclopedia of Bioinformatics and Computational Biology. DOI: 10.1016/B978-0-12-811414-8.20157-0.

Yadav, M., Dutta, S. & Sharma, R. K. (2017), New Directions from Academia, *Hazardous Reagent Substitution*, (pp. 130-167).

## Research Projects

Prof. Ramesh Chandra: DST-SERB, 2016-2019, *Synthesis and Characterization of Eco-friendly Gold supported LDH catalyst, application in Synthesis of Organic Compounds*. Rs. 49,61,440/-

Prof. Ramesh Chandra: DST-SERB, 2016-2019, *Design, synthesis and biological screening of chiral pyrazinoindoles and pyrazinopyrroles as potential antibacterial agent*. Rs. 43,26,000/-

Prof. Ramesh Chandra: CSIR, 2016-2019, *Synthesis and Biological Evaluation of a Novel Class of Anti-tumor drugs based upon the natural alkaloid noscapine*. RS. 29,76,540/-

Prof. R. K. Sharma: DST-WTI , 2017-2020, *Designing and synthesis of highly stable functionalized silica based organic-inorganic hybrid materials/nanomaterials for the online and selective recovery of various metals from different charged wastewater*. Rs. 47,27,000/-

Prof. A. K. Prasad: DRDO, 2 years, *Sanction of CARS, Synthesis of flame-retardant breathable moisture-cure Polyurethane (PU) based adhesive" to Dept. of Chemistry, University of Delhi under CFEES S&T project "Development of Multifunctional Moisture Barrier Fabric for Fire Protective Suits*. Rs. 44,37,600/-

Prof. A. K. Prasad: DRDO- DIPAS, one year, *Synthesis and study of aggregation behaviour of sugar-PEG based amphiphilic co-polymers for the encapsulation of dihydropyridine derivatives*. Rs. 9,60,000/-

Prof. Rama Kant: DST-SERB, 2017-2020, *Electrochemical Impedance at Rough and Porous Electrodes: Theory and Experimental Corroboration*. Rs. 38,50,440/-

Prof. Rama Kant: Applied Materials India Pvt Ltd, 01.08.2015-31.03.2018, *Modeling of Solid State Batteries*. Rs. 12,48,000/-

Prof. S. K. Sharma: DST-DFG International Collaboration, 2017–2020, *Chemo-enzymatic synthesis of multivalent dendritic architectures for the control of neurodegenerative disorders*. Rs. 38,60,980/-

Prof. S. K. Sharma: DST-SERB, Jan. 2016 – Dec. 2018, *Design and Synthesis of Oligoglycerol and PEG based Nanocarriers for Biomedical Applications*. Rs. 47,26,000/-

Prof. R. Gupta: SERB, Dec. 26<sup>th</sup> 2016 – Dec. 25<sup>th</sup> 2019, *Molecular Assemblies and Coordination Polymers Decorated with Hydrogen Bonds: Recognition, Binding, and Activation of Analytes/Substrates*, Rs. 49,35,040/-

Prof. R. Gupta: CSIR, June 1<sup>st</sup> 2016 – May 31<sup>st</sup> 2019, *Metal Complexes with Secondary Coordination Sphere: Recognition and Binding of Analytes and Activation of Substrates*, Rs. 6,00,000/-

Prof. Parbati Biswas: DST-SERB, 2017-2020, *Hydration Pattern of Misfolded proteins*. Rs. 43,39,940/-

Prof. R. Nagarajan: DST-SERB, 01<sup>st</sup> Aug. 2017-31<sup>st</sup> Jul. 2020, *Exploring multifunctional properties of the solid solutions of rare-earth oxides with oxides of p-block metal ions possessing related structures*. Rs. 33,68,695/-

Prof. S. Uma: DST-SERB, 27<sup>th</sup> Sept. 2017–26<sup>th</sup> Sept. 2020, *Exploratory Synthetic Investigation to Recognize Novel Solid Oxide Materials with an Emphasis on Layered Structures*. Rs. 34,28,480/-

Dr. Indrajit Roy: Nanomission, 2017-2020, *Drug-loaded magnetic-nanoscale metal-organic frameworks (MNMOFs) for applications in targeted drug delivery and light-activated therapy*. Rs. 54,30,316/-

Dr. Indrajit Roy: UGC-UKIERI, 2017-2020, *Multifunctional Nanoparticles in Cancer Therapy*. Rs. 34,11,828/-

Dr. P. Venkatesu: CSIR, 2017-2020, *The attenuating ability of ionic liquids against the thermal, chemical and cold-induced unfolding of proteins*. Rs. 18,00,000/-.

Dr. P. Venkatesu: DST-SERB, 2017-2020, *The phase transition of thermo-responsive polymer in the presence of proteins as stimuli*. Rs. 40,00,000/-

Dr. Raj Kishore Sharma: SERB, 2018 -2020 (3 years), *Physicochemical performance evolution by tuning the growth variables of holey graphene nanoribbon carbon soot derived aerogel based asymmetric supercapacitor*. Rs. 39,00,000/-

Dr. Surendra Singh: DST-SERB, 2017-2020, *Development of efficient and reusable chiral catalysts for the asymmetric Fridel-Craft reaction for the synthesis of biological important molecules*. Rs. 35,93,480/-

Dr. Surendra Singh: CSIR 2018, *Synthesis and Development of Chiral Metal Organic Frameworks and Their Application in Asymmetric Catalysis*. Rs. 28,06,000/-

Dr. Sasanka Deka: Science and Engineering Research Board, 2017-2020, *Development of advanced nanomaterials for benchmark electrocatalytic hydrogen and oxygen evolution from water*. Rs. 35,00,000/-

Dr. Sandeep Kaur: CSIR, 2018-2021, *Design, Synthesis and Characterization of Earth-Abundant Metal Complexes (Co, Fe, Ni) as Electrocatalysts for Proton Reduction*. Rs. 15,75,000/-

Dr. Firasat Hussain: DST-SERB, 2017-2018, *Synthesis, characterization and catalytic applications of organic-inorganic hybrid 3d-4f heterometallic polyoxotungstates*. Rs. 35,00,000/-.

## **Patents Filed/Granted**

Diwan S. Rawat\*, Binghe Wang, Nitin Kumar, Sunny Manohar, Xiaochuan Yang, Guojing Sun, Patent No: US 9884825B2 (2017), Curcumin analogues and methods of making and using thereof.

Diwan S. Rawat\*, Sunny Manohar, Umma disetty Chinna Rajesh, Deepak Kumar, Anuj Thakur, Mohit Tripathi, Panyala Linga Reddy, Shamseer Kulangara Kandi, Satyapavan Vardhineni, Kwang-Soo, and Chun-Hyung Kim, Pub no: US 2017/0209441 A1 (2017), Amino-quinoline based hybrids and uses thereof.

Diwan S Rawat\*, Sunny Manohar, U. Chinna Rajesh, IN 283657 (2017), Amino-quinoline based hybrids and uses thereof.

Dr. K. Gopalaiah: App. No.: 201811005899, An Anti-Hypertensive Cardio-Protective Composition.

## **Seminars Organized**

Prof. Amarnath Maitra Memorial Seminar, 10<sup>th</sup> February, 2018.

Prof. C. N. R. Rao, Oration Award- by Prof. Clement Sanchez, College de France Lecture, 31<sup>st</sup> January, 2018.

Prof. B. S. Garg Facilitation Seminar, 2<sup>nd</sup> September, 2017.

## **Memorial Lecture**

Prof. Har Gobind Khorana Memorial Lecture by Prof. Goverdhan Mehta, FRS, FNA, National Research Professor, University of Hyderabad.

Prof. R. P. Mitra Memorial Lecture by Prof. E. D. Jemmis, Department of I & PC IISc, Bangalore.

Prof. G. V. B. Subramanian Memorial Lecture by Prof. K. N. Ganesh, Director IISER Tirupati.

Prof. G. S. Saharia Memorial Lecture by Prof. K. R. Prasad, Department of Organic Chemistry, IISc, Bangalore.

Prof. Gurbaksh Sing Memorial Lecture by Prof. Javed Iqbal, Cosmic Discoveries, Hyderabad.

Prof. I. P. Mittal Memorial lecture by Prof. Oliver Reiser, Regensburg, Germany.

Prof. B. D. Laroia memorial lecture by Prof. Norio Shibata, Nagoya Institute of Technology, Japan.

Prof. T. R. Seshadri Memorial lectutre by Prof. v. K. Singh, Director, IISER, Bhopal.

Prof. A. M Bains Memorial lecture by Prof. Kevin Shaughnessy, Chair Department of Chemistry, University of Alabama, USA.

## **Conferences Organized**

*International Conference on Emerging Trends in Drugs Development And Natural-Products (ETDDNP-2018)*, University of Delhi, Delhi, 12-14<sup>th</sup> January, 2018.

## **Seminar/Conference Presentations**

### **Presentations**

### **Medal/Plenary/Keynote/Memorial Lectures**

R. Kant, Acharya J. C. Ghosh Memorial Medal Lecture, *Electrochemical Impedance Spectroscopy of Rough and Porous Electrodes*, 54th Annual Convention of Chemists (ICS-2017), Department of Chemistry, Uka Tarsadia University, Bardoli, Surat, Gujrat, 23<sup>rd</sup> -25<sup>th</sup> December, 2017.

R. Kant, Keynote lecture, *Anomalies in Electric Double Layer Response on Rough and Porous Electrodes*, Second International Conference on Electrochemical Science and Technology, Indian Institute of Science, Bengaluru, 10-12 August, 2017.

S. Deka, Plenary talk, *Metal alloy and chalcogenide nanoparticles for few useful catalytic applications*, International Conference on Nano- and Functional Materials: Interface between Science and Engineering (NFM-2017), BITS Pilani, Pilani Campus, Rajasthan, 16-18 November, 2017.

S. Deka, Memorial lecture, Dr. C.K. Khurana Memorial lecture, Dr. C.K. Khurana Memorial lecture, Gargi College, 6 September, 2017.

### **Invited Talks**

A. K. Prasad, Invited Talk, *Sugars to Value Added Products of Importance*, International Conference on Recent Trends in Science & Technology, SSSKR Innani Mahavidyalaya Washim, Maharashtra, 22-23 March, 2018.

S. Deka, Invited Talk, *Development of transition metal based alloy and chalcogenide nanoparticles and their emerging applications*, March Meeting-School of Physical Sciences, Jawaharlal Nehru University, New Delhi, 16-17<sup>th</sup> March 2018.

R. K. Sharma, Invited Talk, *Edge enriched graphene nanoribbons: Strategies to boost the performance in supercapacitive charge storage and delivery*, "1. International Conference on nanomaterials: initiatives and Applications", Jiwaji University, Gwalior, 9-11 March, 2018.

S. K. Sharma, Invited Talk, *Self-assembly of non-ionic amphiphiles for biomedical applications*, International Conference on Nanomaterials: Initiatives and Applications, Jiwaji University, Gwalior, 9-11 March, 2018.

P. Biswas, Invited Talk, *Exploring Intrinsic Disorder in Proteins*, National Symposium on contributions of Women in Science in India, Indian Science News Association (ISNA), Kolkata, 15-16<sup>th</sup> February, 2018.

S. Deka, Invited Talk, *Ag<sub>1-x</sub>Nix alloy nanoparticles and CuCo<sub>2</sub>S<sub>4</sub> nanosheets and their useful catalytic Applications*, International Conference on Nanobiotechnology, Jamia Millia Islamia, Jamia Nagar, New Delhi, 5-6<sup>th</sup> February, 2018.

A. K. Prasad, Invited Talk, *Important Applications of Bio-renewable Resources*, National conference on “Current Advances in Microbiology & Biotechnology for Agriculture, Industry, Environment and Healthcare”, M. G. S. University Bikaner, 19-20 January 2018.

I. Roy, Invited Oral, *Nanomedicine research at Delhi University in collaboration with UK and USA*, 2<sup>nd</sup> International Workshop on Nanomaterials in Health/Medicine, University of Central Lancashire, Preston, United Kingdom, 16 January, 2018.

S. K. Sharma, Invited Talk, *Fabrication of nanostructures through self-assembly of non-ionic amphiphiles for biomedical applications*, Fourth International Symposium on “Advances in Sustainable Polymers”, IIT Guwahati, 8-11 January 2018.

K. Gopalaiah, Invited Talk, *Bond Formations between Two Nucleophiles: Sustainable Metal-Catalyzed Oxidative Reactions*, 36<sup>th</sup> Annual Conference of Indian Council of Chemists at School of Chemistry, Andhra University, Visakhapatnam, 26-28<sup>th</sup> December, 2017.

S. K. Sharma, Invited Talk, *Carbohydrate Based Architectures for Biomedical Applications*, Symposium on the “Emerging Chemistry and Biology of Carbohydrates”, CARBO-XXXII, IIT Kharagpur, 18-20 December 2017.

A. K. Prasad, Invited Talk, *Carbohydrate Modification: Route to Novel Nucleosides and Amphiphiles*, CARBO-XXXII "Emerging Chemistry and Biology of Carbohydrates" (ECBC-2017), IIT Kharagpur, 18-20 December 2017.

R. Gupta, Invited Talk, *Coordination Polymers and Molecular Assemblies Decorated with Hydrogen Bonds*, Symposium on Modern Trends in Inorganic Chemistry (MTIC-XVII); NCL – Pune & IISER – Pune, India, 11 – 14 December, 2017.

P. Biswas, Invited Talk, *Understanding Intrinsic Disorder in Proteins*, International Conference on Intrinsically Disordered Proteins: Forms, Functions and Diseases 2017, IISER Mohali, Mohali, 9-12 December, 2017.

P. Venkatesu, Invited Talk, *Ammonium ionic liquids as biocompatible co-solvents for the structure and stability of biomolecules*, 3<sup>rd</sup> International conference on global trends in pure and applied chemical sciences, SRM University, Ghaziabad, India, 8-9 December, 2017.

P. Venkatesu, Invited Talk, 12<sup>th</sup> National conference on organics, metallorganics and thermodynamics (NCOMT – 2017), Department of Chemistry, Guru Jambheshwar University of Science & Technology, Hisar, India, 17-18 November, 2017.

R. K. Sharma, Invited Talk, *Sustainable Pathways to Metals Contamination*, Eastern Analytical Symposium and Exhibition, New Jersey, U.S.A., 13-15<sup>th</sup> November, 2017.

R. Gupta, Invited Talk, *Molecularly Designed Architectures: Design Aspects and Applications*, Department of Chemistry, University of Hyderabad, 31 October, 2017.

R. Gupta, Invited Talk, *Designer Functional Materials: A Chemist's View*, 21<sup>st</sup> International Conference of Indian Academy of Physical Sciences (CONIAPS – XXI), Guru Jambheshwar University of Science and Technology, Hisar, Haryana, 28 – 30 October, 2017.

M. Thirumal, Invited Talk, *Microwave dielectrics: Understanding the complexities in Perovskites*, 8<sup>th</sup> conference of Haridwar Chapter of The Indian Science Congress Association Nainital, 14-15 October, 2017.

A. K. Prasad, Invited Talk, *Sugar Modification and Its Novel Application*, 8th National Conference of Haridwar Chapter of The Indian Science Congress Association on Reaching the Unreached through Science & Technology, Nainital, Uttarakhand, 14-15 October 2017.

S. K. Sharma, Invited Talk, *Kinase Inhibitors: Promising candidates for cancer control*, 8th Conference of Haridwar ISCA Chapter, Nainital, 14-15 October, 2017.

I. Roy, Invited Talk, *Inorganic-organic hybrid nanomaterials for targeted and controlled drug delivery*, 2nd International Symposium on Physics, Engineering and Technologies for Bio-Medicine, Institute of Engineering Physics for Biomedicine of the National Research Nuclear University (MEPhI), Moscow, Russia, 10-14 October, 2017.

P. Venkatesu, Invited Talk, Three day National Conference on Innovative perspectives of Chemistry in environment, Pharmacy and Technology (CEPT-2017) and National Convention of Chemistry Teachers (NCCT-2017), Department of Chemistry, Pragati Engineering College, Kakinad, Andhra Pradesh, India, 6-8 October, 2017.

R. Kant, Invited lecture, *Phenomenological Theories for Modelling of Solid State Li-ion Batteries*, 1st World Conference on Solid Electrolytes for Advanced Applications: Garnet & Competitors, Department of Physics, Pondicherry University, India, 6-9 September, 2017.

S. K. Sharma, Invited talk, *Biocatalysts: Modern Tools of Organic Synthesis*, Refresher Course in Chemistry, IIT-ISM Dhanbad, 14 June, 2017.

S. K. Sharma, Invited Talk, *Chemo-enzymatic Synthesis of Biocompatible Polymeric and Dendritic Nano-architectures for Biomedical Applications*, Refresher Course in Chemistry, IIT-ISM Dhanbad, 14 June, 2017.

S. Kaur-Ghumaan, Invited Talk, *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.

R. K. Sharma, Invited Speaker, *Celebrating Earth Day: A step towards Nurturing Nature*, School of Engineering, G. D. Goenka University (GDGU), Gurgaon and National Environment Science Academy (NESA), 28<sup>th</sup> April, 2017.

R. K. Sharma, Lecture, *Fabrication of magnetically retrievable metal nanocatalysts for organic transformations*, 255th ACS National Meeting and Exposition, New Orleans, U.S.A., 18<sup>th</sup> -22<sup>nd</sup> March, 2018.

R. K. Sharma, Lecture, *Advances in Chemical Science and Allied Fields of Science, Health, Education and Environment*, Career College, Govindpura BHEL, Bhopal, 8-10 March 2018.

R. K. Hazra, Lecture, *Exact  $e-e$  (exchange) correlations of 2-D quantum dots in magnetic field: Size extensive  $N=3,4, \dots, 'n'$ -electron systems via multi-pole expansion*, 4<sup>th</sup> Annual World Congress of Smart Materials-2018, Osaka, Japan, Osaka University, Japan, 6-8 March, 2018.

R. K. Sharma, Lecture, *Sustainable Initiatives in Water Management*, Royal Society of Chemistry, North India Section, Green Chemistry Network Centre, Department of Chemistry, University of Delhi and Department of Chemistry, Manav Rachna University, Faridabad (INDIA), 6<sup>th</sup> March, 2018.



R. K. Sharma, Lecture, *Role of Green Chemistry Network Centre in converting waste to wealth through Green Chemistry*, Global Trends in Pure and Applied Chemical Sciences, SRM University, Delhi-NCR Ghaziabad, India, 8-9 December, 2017.

R. K. Sharma, Lecture, *Advancing Green Chemistry: Building a Sustainable Tomorrow*, "12. Green Chemistry Network Centre, Department of Chemistry, University of Delhi and Hindu College", 3-4, October 2017.

R. K. Sharma, Lecture, Green Chemistry and Environmental Health (GCEH-2017), Department of Chemistry, Marwar Business School, Gorakhpur, 25-26<sup>th</sup> September, 2017.

R. K. Sharma, Lecture, One Day National Symposium on Research Projects: Proposal and Grants, Sarvajanik Education Society, Shree Ram Institute of Computer Education and Applied Science, Surat and M. T. B. College Athwalines, Surat (Gujrat), 15<sup>th</sup> September, 2017.

R. Kant, Invited Talk, *Contemporary Electrochemical Energy Systems*, Karunya University, Coimbatore, Tamilnadu, 5 September, 2017.

R. K. Sharma, Lecture, *Green Chemistry Network Centre accelerating innovations in India through Research and Educational Initiatives in Green Chemistry*, 8th International Conference on Green and Sustainable Chemistry (GSC8 2017), Monash University, Melbourne, Australia, 23-26 July, 2017.

R. Gupta, Invited Talk, *Coordination Chemistry: History and Journey to Future*, Science Academies Lecture Workshop, Department of Chemistry, University of Kashmir, Srinagar, 19 – 20 July, 2017.

R. Gupta, Invited Talk, *Supramolecular Chemistry: Intriguing Examples*, Science Academies Lecture Workshop, Department of Chemistry, University of Kashmir, Srinagar, 19 – 20 July, 2017.

P. Venkatesu, Invited Talk, *Ionic liquids as Biocompatible Co-solvents for the Stability of Biomolecules*, 19th international of pure & applied biophysics (19<sup>th</sup> IUPAB congress) and 11th EBSA congress, Edinburgh, U. K., 16-20 July, 2017.

K. Gopalaiah, Invited Talk, *Sustainable Metal-Catalyzed Aerobic Oxidative Transformations for Synthesis of Nitrogen-Heterocycles*, 10<sup>th</sup> National Conference on Solid State Chemistry and Allied Areas at Delhi Technological University, Delhi, 1-3 July, 2017.

R. Gupta, Invited Talk, *Designer Materials: A Chemist's View*, 10<sup>th</sup> National Conference on 'Solid State Chemistry and Allied Areas (ISCAS – 2017), Delhi Technological University, 1 – 3 July, 2017.

R. K. Sharma, Lecture, *Making Green Chemistry an essential component of Chemical Education in India*, 21<sup>st</sup> Annual Green Chemistry & Engineering Conference (GC&E), Reston, Virginia, U. S. A., 13-15 June, 2017.

### **Oral/Poster**

S. Gupta and M. D. Milton, Oral, *Novel AIEE active twisted pyridopyrazines: Synthesis, photophysical properties and their applications as probes for Hg<sup>2+</sup> detection in aqueous media*, International Conferences on Advances in Analytical Sciences (ICAAS-2018), CSIR-Indian Institute of Petroleum, Dehradun, India, 15-17 March, 2018.

T. Sachdeva and M. D. Milton, Oral, *Novel Phenothiazine-Based Non-Planar D- $\pi$ -A Hydrazones: Aggregation induced emission, Mechanofluorochromic and Acidochromic Behavior*, International Conferences on Advances in Analytical Sciences (ICAAS-2018), CSIR-Indian Institute of Petroleum, Dehradun, India, 15-17 March, 2018.

A. Singh, S. Kukreti, Oral, *Recognition and destabilization of Parallel G - quadruplex present in Promoter location of Human MYH7 gene*, Emerging Trends in Drugs Development and Natural-Products (ETDDNP-2018), Department of Chemistry, University of Delhi, Delhi, 12-14<sup>th</sup> January, 2018.

R. Kaushik and F. Hussain, Oral, *Synthesis and Characterization of Inorganic-Organic Hybrids of Transition Metal Substituted Arsenotungstates*, 24<sup>th</sup> ISCB International Conference on "Frontier Research in Chemistry & Biology Interface, Department of Chemistry, Manipal University Jaipur, Rajasthan, 11<sup>th</sup>-13<sup>th</sup> January, 2018.

N. R. Chowdhury, R. Kant, Oral, *Theory for Intensity Modulated Photocurrent Spectroscopy on Rough and Finite Fractal Dye Sensitized Solar Cell*, Dynamic Day-XII, Ashoka University, Sonapat Haryana, 25<sup>th</sup> November, 2017.

S. Sharma, P. Biswas, Oral, *Hydration water dynamics around a protein surface: a first passage time approach*, Dynamics Day XII, Ashoka University, Sonapat, 25<sup>th</sup> November, 2017.

M. Kumar, S. Srivastav, R. Kant, Oral, *Theory for EIS of Quasi reversible Charge Transfer in Presence of Uncompensated Solution Resistance*, Second International Conference on Electrochemical Science and Technology, Indian Institute of Science, Bengaluru, 10-12 August, 2017.

## Posters

R. Kaushik, S. Parbhakar and F. Hussain, Poster, *Synthesis and Characterization of lanthanoid substituted transition metal containing inorganic-organic hybrid polyoxometalates*, Innovations in Sciences in Emerging Challenges in Health and Environment (NSHE-2018), Department of Chemistry, Daulat Ram College, University of Delhi, 19<sup>th</sup>-20<sup>th</sup> March, 2018.

V. Das, I. Khan and F. Hussain, Poster, *Self-assembled heterometallic {Co7-Ho1} nanocluster: A 3d-4f trimeric Keggin-type silicotungstate [HoCo7Si3W29O108(OH)5(H2O)4]18- and its catalytic applications*, National Conference on "Chemical Sciences: Opportunities & Challenges, Department of Chemistry, St. Stephen's College, University of Delhi, 19<sup>th</sup>-20<sup>th</sup> March, 2018.

V. Kaim, M. Natarajan and S. Kaur-Ghumaan, Poster, *Electrochemical Proton Reduction Catalyzed by Thiolate-Bridged Manganese Carbonyl Complexes*, National Conference on Chemical Sciences: Opportunities & Challenges, St. Stephen's College, University of Delhi, 19<sup>th</sup>-20<sup>th</sup> March, 2018.

P. Gupta and R. Nagarajan, Poster, *Fine tuning bifunctional properties of  $Y_{0.5}Gd_{0.5}BO_3$  by doping with  $Ce^{3+}$  and codoping with  $Li^+$ ,  $Ca^{2+}$  and  $Al^{3+}$  following an epoxide mediated gel approach*, International conference on advances in analytical sciences, ICAAS-2018, CSIR-Indian Institute of Petroleum, Dehradun, Uttarakhand, 15-17<sup>th</sup> March, 2018. (\*Awarded Best Poster Award of the Symposium\*).

Shalu, P. Rawat, S. Uma and R. Nagarajan, Poster, *Mechanochemical transformation of  $ZnO_2$  to highly defective  $ZnO$* , International conference on advances in analytical sciences, ICAAS-2018, CSIR-Indian institute of petroleum, Dehradun, Uttarakhand, 15-17<sup>th</sup> March, 2018.

M. Kumar, V. K. Tripathi and R. Nagarajan, Poster, *Emergence of defect fluorite structure in nanosized Thoria doping with some divalent transition metal ions*, International conference on advances in analytical sciences, ICAAS-2018, CSIR-Indian institute of petroleum, Dehradun, Uttarakhand, 15-17<sup>th</sup> March, 2018.

S. Atri, P. Rawat, S. Uma, R. Nagarajan, Poster, *Mechanochemical transformation of ZnO to defect loaded ZnO*, Advances in Analytical Sciences (ICAAS-2018), CSIR-Indian institute of petroleum, Dehradun, Uttarakhand, 15-17<sup>th</sup> March, 2018.

M. Kumar, S. Srivastav, R. Kant, Poster, *EIS with DC bias at Rough Electrodes: Quasireversibility and Uncompensated Resistance*, Prof. R. C. Paul National Symposium, Panjab University, Chandigarh, 22-23<sup>rd</sup> February, 2018. (\*Awarded Best Poster Award of the Symposium\*)

A. Kumar, A. Baruah and P. Biswas, Poster, *Role of Local and Nonlocal Interactions and Site directed point mutations in Folding and Misfolding of Globular Proteins*, ACS on Campus, University of Delhi, Delhi, 5<sup>th</sup> February, 2018.

J. Kaur, R. Kant, Poster, *Theory for Potential of Zero Charge of Self Assembled Monolayer over Curved Metal Electrode*, ACS on Campus India Roadshow, University of Delhi, 5<sup>th</sup> February, 2018. (\*Awarded Best Poster Award of the Symposium\*)

N. R. Chowdhury, R. Kant, Poster, *Intensity Modulated Photocurrent Spectroscopy at Illuminated Rough Semiconductor Electrodes*, ACS on Campus India Roadshow, University of Delhi, 5<sup>th</sup> February, 2018.

N. Goswami, R. Kant, Poster, *Theory for Electrochemical Impedance Response of Solid State Electrolyte*, ACS on Campus India Roadshow, University of Delhi, Delhi, 5<sup>th</sup> February, 2018.

S. Sharma and P. Biswas, Poster, *Hydration Water around the Protein Surface*, ACS on Campus, University of Delhi, Delhi, 5<sup>th</sup> February, 2018. (\*Awarded Best Poster Award of the Symposium\*)

Neha, R. Kant, Poster, *Influence of Excluded Volume Interactions (EVI) on Dynamics of Dendrimer and Sierpinski Fractal Polymers in Random Flow*, 22<sup>nd</sup> CRSI National Symposium in Chemistry and 12<sup>th</sup> CRSI-RSC Symposium in Chemistry, School of Studies in Chemistry, Pt. Ravishankar Shukla University, Raipur (Chhattisgarh), 1-4<sup>th</sup> February, 2018.

Sonia, Komal, S. Kukreti, M. Kaushik, Poster, *A Physicochemical approach to study and compare the genotoxic potential of chitosan and citrate reduced gold nanoparticles towards calf thymus DNA*, International Conference on "Emerging Trends in Drugs Development and Natural-Products, Department of Chemistry, University of Delhi, Delhi, 12-14<sup>th</sup> January, 2018.

K. Saksena, A. Shrivastava and R. Kant, Poster, *Chiral analysis of ascorbic acid in bovine serum using ultrathin molecular imprinted polyaniline/graphite electrode*, Emerging Trends in Drugs Development and Natural Products, Department of Chemistry, Delhi University, Delhi, 12-14<sup>th</sup> January, 2018.

M. Singh, E. Solel, E. Keinan, O. Reany, S M S Chauhan, R. Chandra, Poster, *Aza-Bambusurils En Route to Anion Transporters*, International Conference on Emerging Trends in Drugs Development And Natural-Products (ETDDNP-2018), University of Delhi, Delhi, 12-14<sup>th</sup> January, 2018.

N. Singh, V. Tomar and R. Chandra, Poster, *Ce-Bearing Solid Base Catalyst: Synthesis, Characterization and its Application in Suzuki-Miyaura Reaction*, International Conference on Emerging Trends in Drugs Development And Natural-Products (ETDDNP-2018), University of Delhi, Delhi, 12-14<sup>th</sup> January, 2018.

N. Kaur and R. Chandra, Poster, *Biomarker Discovery in Drug Development with an emphasis on LiverToxicogenomics: Bench to Bedside Paradigms Employing Zebrafish*, International Conference on Emerging Trends in Drugs Development And Natural-Products (ETDDNP-2018), University of Delhi, Delhi, 12-14<sup>th</sup> January, 2018.

D. Sood, V. Tomar and R. Chandra, Poster, *Application of chitosan coated magnetic nanoparticles as an efficient drug delivery system for Noscapine*, International Conference on Emerging Trends in Drugs Development And Natural-Products (ETDDNP-2018), University of Delhi, Delhi, 12-14<sup>th</sup> January, 2018.

H. Chugh, V. Tomar, P. Kumar, H. Joshi, R. Chandra, Poster, *Exploration of the Interaction between the Anti-cancer Drug Noscapine-Hcl and Human Serum*, International Conference on Emerging Trends in Drugs Development And Natural-Products (ETDDNP-2018), University of Delhi, Delhi, 12-14<sup>th</sup> January, 2018.

V. Das and F. Hussain, Poster, *Synthesis and characterization of heterometallic 3d-4f Polyoxometalates containing Silicotungstates*, 24<sup>th</sup> ISCB International Conference on "Frontier Research in Chemistry & Biology Interface, Department of Chemistry, Manipal University Jaipur, Rajasthan, 11<sup>th</sup>-13<sup>th</sup> January, 2018.

I. Khan and F. Hussain, Poster, *Syntheses, crystal structure and solid state properties of lanthanoid containing nanocluster: [(Ln<sub>2</sub>SiW<sub>10</sub>O<sub>38</sub>)<sub>4</sub>(W<sub>3</sub>O<sub>8</sub>)(OH)<sub>4</sub>(H<sub>2</sub>O)<sub>2</sub>]<sub>26</sub>*, 24<sup>th</sup> ISCB International Conference on "Frontier Research in Chemistry & Biology Interface, Department of Chemistry, Manipal University Jaipur, Rajasthan, 11<sup>th</sup>-13<sup>th</sup> January, 2018.

P. Singh, M. Nath, Poster, *Synthesis and spectroscopic properties of  $\beta,\beta'$ -fused pyridoporphyrins*, 40<sup>th</sup> ISCB International Conference on Frontier Research in Chemistry & Biology Interface (ISCBC-2018), Manipal University, Jaipur India, 11<sup>st</sup>-13<sup>th</sup> January, 2018.

Tekuri, M. Nath, Poster, *Synthesis and photophysical properties of  $\beta,\beta'$ -fused benzo[f]quinoxalinoporphyrins*, 11<sup>st</sup>-13<sup>th</sup> January 2018 40<sup>th</sup> ISCB International Conference on Frontier Research in Chemistry & Biology Interface (ISCBC-2018), Manipal University, Jaipur, India, 11<sup>st</sup>-13<sup>th</sup> January, 2018.

A. K. Singh, S. K. Sharma, Poster, *Aggregation Behaviors of Non-Ionic Twinned Amphiphiles and Their Application as Biomedical Nanocarriers*, Fourth International Symposium on "Advances in Sustainable Polymers", IIT Guwahati, 8-11 January, 2018.

Rashmi, S. K. Sharma, Poster, *Synthesis of Non-ionic Bolamphiphile and Study of its Self-assembly and Transport Behaviors for Drug Delivery Application Glucitol based self-assembling non-ionic amphiphilic architectures for encapsulation of non-polar drugs*, Fourth International Symposium on "Advances in Sustainable Polymers", IIT Guwahati, 8-11 January, 2018.

J. Kaur, R. Kant, Poster, *Theory for Potential of Zero Charge of Self Assembled Monolayer over Curved Metal Electrode*, 54<sup>th</sup> Annual Convention of Chemists (ICS-2017), Department of Chemistry, Uka Tarsadia University, Bardoli, Surat, Gujrat, 23<sup>rd</sup> -25<sup>th</sup> December. (Prof. S. T. Nandibewoor Award for Best Poster).

Sonia, Komal, S. Kukreti, Mahima Kaushik, Poster, *A Physicochemical approach to study the genotoxic potential of chitosan and citrate reduced gold nanoparticles towards calf thymus DNA: A physicochemical approach*, One-day Indo-Hungarian symposium on Recent advances in chemistry and biology, Miranda House, Department of Chemistry, University of Delhi, Delhi, 11<sup>th</sup> December 2017.

Komal, Sonia, S. Kukreti, M. Kaushik, Poster, *An environmentally benign approach to synthesize Silver nanoparticles using Epipremnum aureum leaf extract and its interaction studies with Calf Thymus DNA*, One-day Indo-Hungarian symposium on Recent advances in chemistry and biology, Miranda House, Department of Chemistry, University of Delhi, Delhi, 11<sup>th</sup> December 2017.

N. Singh, R. Tomar, V. Tomar and R. Chandra, Poster, *Synthesis and Characterization of Ce-Bearing Solid Base Catalyst and its Application in Suzuki-Miyaura Reaction*, Indo-Hungarian Symposium on Recent Advantages in Chemistry and Biology, Miranda House, University of Delhi, 11<sup>th</sup> December 2017.

R. Tomar, V. Tomar and R. Chandra, Poster, *Synthesis and Characterization of Ce-Bearing Solid Base Catalyst and its Application in Henry Reaction*, Indo-Hungarian Symposium on Recent Advantages in Chemistry and Biology, Miranda House, University of Delhi, 11<sup>th</sup> December 2017.

G. Rathee, R. Tomar, V. Tomar and R. Chandra, Poster, *Synthesis and Characterization of Ce-Bearing Solid Base Catalyst and its Application in Suzuki-Miyaura Reaction*, Indo-Hungarian Symposium on Recent Advantages in Chemistry and Biology, Miranda House, University of Delhi, 11<sup>th</sup> December 2017.

V. Tomar, R. Chandra and S. Prakash, Poster, *Metabolism of Anticancer Agent Noscapine and Analogs*, International Conference, 60th Anniversary of Artificial Cells in conjugation with XVI ISBS Int. Symposium Blood Substitutes & Oxygen Therapeutics V ISNS Nanomedicine Conference, Montreal, Qubec, Canada, 13-15<sup>th</sup> November 2017.

Komal, Sonia, S. Kukreti, M. Kaushik, Poster, *Physicochemical studies of silver nanoparticles prepared using Epipremnum aureum leaves extract with Calf Thymus DNA*, Recent Advances In Chemical Sciences Towards Green & Sustainable Environment, Aditi Mahavidyalaya, University of Delhi, Delhi, 10-11<sup>th</sup> October, 2017.

V. Kaim, M. Natarajan and S. Kaur-Ghumaan, Poster, *Electrocatalytic Production of Hydrogen by Manganese Imidazole Complexes: A Renewable and Sustainable Source of Energy*, Green Chemistry New Zealand, University of Auckland, New Zealand, December, 2017.

Hemlata, M. Natarajan and S. Kaur-Ghumaan, Poster, *Mononuclear Iron Carbonyl Complex  $[Fe(\eta\text{-}bdt)(CO)_2(PTA)_2]$  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.

Sonia, Komal, S. Kukreti, M. Kaushik, Poster, *Physicochemical study of gold nanoparticles synthesized through Green as well as Chemical method: Interaction with Calf Thymus DNA and the role of stabilizing agent*, Recent Advances In Chemical Sciences Towards Green & Sustainable Environment, Aditi Mahavidyalaya, University of Delhi, Delhi, 10-11 October, 2017.

Sonia, Komal, S. Kukreti, M. Kaushik, Poster, *Unravelling the binding of Calf Thymus DNA with metal nanoparticles: A comparative study of chitosan and citrate stabilized gold nanoparticles*, Trends in Nanobiotechnology (Biotikos), Teri University, Delhi, 28-29 September, 2017.

Komal, Sonia, S. Kukreti, M. Kaushik, Poster, *Green synthesis of silver nanoparticles using Epipremnum aureum leaf extract and its interaction studies with Calf Thymus DNA*, Trends in Nanobiotechnology (Biotikos), Teri University, Delhi, 28-29 September, 2017.

M. Pokhriyal, V. Malik, S. Uma, Poster, *Synthesis and characterization of multifunctional mineral beyerite  $\text{CaBi}_2\text{O}_2(\text{CO}_3)_2$* , 24th Congress & General Assembly of the International Union of Crystallography 2017, Hyderabad, 21- 28th August, 2017.

A. Sethi, S. Uma, Poster, *Novel  $\text{Sb}^{5+}$  containing oxide possessing unique structural features*, 24th Congress & General Assembly of the International Union of Crystallography 2017, Hyderabad, 21- 28th August, 2017.

Hemlata and S. Kaur-Ghumaan, Poster, *Monothiolate versus Dithiolate-Bridged  $\{2\text{Fe}-2\text{S}\}$  Model Complexes with a Diphosphine Ligan*, 2<sup>nd</sup> International Conference on Electrochemical Science and Technology (ICONEST-2017), J. N. Tata Auditorium, IISc-Bangalore, August-2017.

A. Kumar, A. Baruah and P. Biswas, Poster, *Role of Local and Nonlocal Interactions and Site directed point mutations and Folding and Misfolding of Globular Proteins* Breaking Barriers through Bioinformatics and Computational Biology, IIT Delhi, Delhi, 31 July - 1 August, 2017.

S. Sharma and P. Biswas, Poster, *Hydration Water around the Protein Surface* Breaking Barriers through Bioinformatics and Computational Biology, IIT Delhi, Delhi, 31 July - 1 August, 2017.

N. Goswami and R. Kant, Poster, *Theory for Electrochemical Impedance Response of Solid State Electrolyte*, 1st World Conference on Solid Electrolytes for Advanced Applications: Garnet & Competitors, Department of Physics, Pondicherry University, India, 6-9 September, 2017.

V. K. Tripathi and R. Nagarajan, Poster, *Solid solution synthesis of  $\text{Gd}_{1-x}\text{Dy}_x\text{CrO}_3$ : Magnetic, optical and catalytic properties*, 10th National Conference on solid state chemistry and allied areas, ISCAS-2017, Delhi technological university, Delhi, 01-03<sup>rd</sup> July, 2017.

R. K. Sharma, Poster, *Curcumin loaded silver Nanoparticles: An effective anti HIV therapeutics?*, Department of Medicine Research day, University of Buffalo. (Hotel Millenium) Buffalo. USA., 24<sup>th</sup> June 2017.

R. K. Sharma, Lecture, 6th National Conference on Chemical & Environmental Sciences, Emerging Dimensions and challenges ahead (NCCES-2017), Arya P. G. College, Panipat, 1<sup>st</sup> April, 2017.

## **Other Inter-Institutional Collaboration**

Prof. S. K. Sharma: Collaboration with Prof. Rainer Haag, Freie University Berlin, Germany.

Prof. S. K. Sharma: Collaboration with Prof. K. Parang, Chapman University, CA, USA.

Prof. S. K. Sharma: Collaboration with Prof. H. K. Gautam, CSIR-IGIB, Delhi. (student's co-supervisor)

Prof. S. K. Sharma: Collaboration with Dr. Praveen Vats, DRDO-DIPAS, Delhi. (student's co-supervisor)

Prof. M. Thirumal: Collaboration with IITD, Delhi with Prof. A. K. Ganguli. (student's co-supervisor)

Prof. M. Thirumal: Collaboration with INMAS with Dr. Anupama Datta. (student's co-supervisor)

### **Students Under Exchanged Programme**

Prof. S. K. Sharma: Outgoing: Ms. Rashmi visiting Free Universitat Berlin, Germany.

### **Number of M.Phil./Ph.D. Degrees Awarded**

**Ph.D. :** 53

**M.Phil. :** 0

**Faculty Strength:** 36.

### **Other Significant Information**

The department at present has 600 M.Sc. students and 300 Ph.D. scholars.