

## Department of Chemistry

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### Research Publications

#### Research Papers Published in Refereed and Peer Reviewed Journals

1. Novel Horizon: Smart TiO<sub>2</sub>/Sn(IV)SbPnanocomposite with enhanced electrochemical and photocatalytic properties, S. Kaushal, H. Kaur, S. Kumar, R. Badru, S. Mittal and Prit Pal Singh, Russ. J. Inorg. Chem., Vol. 65 (4) pp. 616–625, 2020.
2. Synthesis and electrochemical behaviour of GO doped ZrPnanocomposite membranes, VanitaKumari, Rahul Badru, Sandeep Singh, SandeepKaushal and Prit Pal Singh, J. Environ. Chem. Eng., 8, 103690, 2020.
3. Photodegradation of Organic Pollutants using heterojunctions: A Review, Parul, KamalpreetKaur, Rahul Badru, SandeepKaushal and Prit Pal Singh, J. Environ. Chem. Eng., 8, 103666, 2020.
4. Efficient removal of Hg (II) ions from waste water by a new nano- composite poly-o-toluidine tin zirconium (IV) molybdophosphate, RupinderKaur, SandeepKaushal and Prit Pal Singh, Int J Environ Anal Chem, DOI: 10.1080/03067319.2019.1659253, 2019
5. Selective removal of lead (II) ions and estimation of Ca (II) ions using poly-o-toluidine-zirconium (IV) molybdophosphate, RupinderKaur, SandeepKaushal and Prit Pal Singh, Chem Pap, <https://doi.org/10.1007/s11696-019-00763-4>, 2019
6. Estimation of Trace Level Cadmium (II) by Polyaniline-zirconium phosphoratenanocomposite based membrane electrode; SandeepKaushal, Rahul Badru, Prit Pal Singh, Sanjeev Kumar and Susheel K Mittal, J. Anal. Chem., 74, 2019
7. Study of photocatalytic and antibacterial activities of graphenenano sheets, Manmeet Singh, Nardev Kumar Bajaj, AdityaBhardwaj, Prit Pal Singh, Pushpender Kumar, Jeewan Sharma, Advanced Composites and Hybrid Materials, doi/10.1007/s42114-018-0056-z364, 2018
8. Purification of Metagenomic DNA using Novel Nanocomposite Titanium Dioxide-polyaniline Tin (IV) antimonophosphate, Insights into the Mechanism Underlying Purification Process; SandeepKaushal, JaspreetKaurBoparai, RamanpreetKaur, Gurbir Singh, Tejwant Singh Kang, Rahul Badru, Prit Pal Singh, Pushpender Kumar Sharma, Curr. Biotechnol, 7, 000-000, 2018.

9. Photocatalytic degradation of methyl orange using  $\text{TiO}_2/\text{SnO}_2$  binary nano composite; Manmeet Singh, Prit Pal Singh and Jeewan Sharma, AIP ConfProc 2006, 030029; doi: 10.1063/1.5051285, 2018
10. Boron doped graphene oxide with enhanced photocatalytic activity for organic pollutants; Manmeet Singh, SandeepKaushal, Prit Pal Singh , Jeewan Sharma, J PhotochPhotobio A, 364, 2018, pp 130-139
11. A facile means for the improvement of sensing properties of metal-organic frameworks through control on the key synthesis variables; Preeti Kukkar, Deepak Kukkar, Heena Sammi, Karanveer Singh, Mohit Rawat, Prit Pal Singh, Soumen Basu, Ki-Hyun Kim, Sensor Actuat B-Chem, 271, 2018, pp 157-163
12. Efficient Removal of Cationic and Anionic Dyes from Their Binary Mixtures by Organic–Inorganic Hybrid Material; Sandeep Kaushal, Rahul Badru, Sanjeev Kumar, Harpreet Kaur, Prit Pal Singh, J Inorg Organomet P, 28, 2018, pp 968-977.
13. Bioconjugation of luminescent Eu-BDC-NH<sub>2</sub> MOFs for highly efficient sensing of BSA; Preeti Kukkar, Heena Sammi, Mohit Rawat, Prit Pal Singh, Soumen Basu, and Deepak Kukkar, AIP ConfProc 1953, 2018, 030203; <https://doi.org/10.1063/1.5032538>
14. Developments in Synthesis, Characterization and Applications of Composite Ion-exchange Materials: A Review, SandeepKaushal, MandeepKaur, S.K. Mittal and Prit Pal Singh, Orient. J. Chem., 33(4), 2017, pp 1726-35
15. Estimation of Cr (III) in industrial effluents by zinc oxide-tin (IV) antimonophosphate nanocomposite based ion selective electrode; SandeepKaushal, MandeepKaur, S.K. Mittal and Prit Pal Singh, Asian J. Chem, 29(7) 2017, pp 1595 - 1601
16. Synthesis and Characterization of Tin (IV) Antimonophosphate Nanocomposite Membrane Incorporating 1-Dodecyl-3-methylimidazolium Bromide Ionic Liquid; SandeepKaushal, Gurbir Singh, Prit Pal Singh and Tejwant Singh Kang, RSC Adv., 7, 2017, pp 12561-12569
17. Zirconium (IV) phosphoborate based ion selective membrane electrode for potentiometric determination of Ba(II) ions, SandeepKaushal, A.P. Singh, Susheel K. Mittal and Prit Pal Singh, Asian J. Chem., 29 (2) 2017, pp 375-380.

18. Electrochemical behavior of a membrane based on Zirconium (IV) phosphoborate nanocomposite and its application in dye removal, Sandeep Kaushal, Rahul Badru, Sanjeev Kumar, Pushpender K. Sharma, Susheel K. Mittal and Prit Pal Singh, *RSC Adv.*, 6, 2016, pp 111606-111615.
19. Nanocomposite Zirconium phosphoborate Ion-exchanger incorporating carbon nanotubes with Photocatalytic Activity, Sandeep Kaushal, Rahul Badru, Prit Pal Singh, Sanjeev Kumar and Susheel K. Mittal, *Sep Sci Technol*, 51 (18), 2016, pp 2896-2902.
20. Fabrication of a Mercury (II) Ion Selective Electrode based on poly-o-Toluidine-Zirconium Phosphoborate, Sandeep Kaushal, Rahul Badru, Sanjeev Kumar, Susheel K. Mittal and Prit Pal Singh, *RSC Adv.*, 6, 2016, pp 3150-3158.
21. A Novel Zinc Oxide-Zirconium (IV) Phosphate Nanocomposite as Anti-bacterial Material with Enhanced Ion Exchange Properties, Sandeep Kaushal, Pushpender K. Sharma, Susheel K. Mittal and Prit Pal Singh, *Colloid Interfac Sci*, 7, 2015, pp 1-6.
22. Study of effect of Temperature on the Properties and Structure of Zirconium Phosphoborate Ion Exchanger, Sandeep Kaushal, Prit Pal Singh and S.K. Mittal, *Int. J. of Adv. Tech. Eng. Sc.*, 02 (12), 2014, pp 663-669.
23. Yttrium (III) Selective Electrode Based On Zirconium (IV) Phosphoborate, Sandeep Kaushal, Prit Pal Singh and S.K. Mittal, *J New Mat Electr Sys*, Vol. 17, 2014 pp 5-8.
24. Electrochemical studies on zirconium phosphoborate based heterogeneous membranes, Sandeep Kaushal, Prit Pal Singh and S.K. Mittal, *J ELECTROCHEM SCI TE*, 4 (1), 2014, pp 55 – 65.
25. Synthesis of New Zirconium Based Ion Exchangers & Their Characterization, S.K. Mittal, Prit Pal Singh and Harish Kumar, *J. Ion Exch*, Vol. 16 (1), 2005, pp 1 – 7.
26. Structural Analysis of Some Inorganic Ion Exchange Materials, Proceedings of the National Conference on Materials and Related Technologies held at TIET, Patiala
27. Exchange kinetic studies on zirconium antimonophosphate, S.K. Mittal & Prit Pal Singh, *Indian J. Chem.*, Vol. 41A, 2002, pp 500 – 505.
28. Electrochemical studies on zirconium phosphotungstate based heterogeneous membranes, S.K. Mittal & Prit Pal Singh, *J New Mat Electr Sys*, Vol. 4, 2001, pp 221 – 226.

29. Synthesis, ion exchange properties and applications of tin(IV) antimonarsenate, S.K. Mittal & Prit Pal Singh, *React Funct Polym*, Vol. 40, 1999, pp 231 – 240.
30. Thorium selective electrode using zirconium phosphoborate as electroactive material, S.K. Mittal & Prit Pal Singh, *Indian J. Chem.*, Vol. 34A, 1995, pp 1009 – 1011.

### **Papers in Conferences**

1. Estimation of Cr (III) in Industrial Effluents by Zinc Oxide-Tin (IV) Antimonophosphate Nanocomposite Based Ion Selective Electrode, Sandeep Kaushal and Prit Pal Singh, 1<sup>st</sup> National Seminar on “Responsible Research and Innovations In Science & Technology” (RRIST-2017) held at Guru Nanak College, Budhlada, District Mansa, Punjab on March 18, 2017.
2. Tin (IV) antimonophosphate and 1-dodecyl-3-methylimidazolium bromide ionic liquid based nanocomposite membrane – Synthesis and Electrochemical Characterization, Sandeep Kaushal and Prit Pal Singh, VI<sup>th</sup> National Symposium on “Advances in Chemical Sciences” held at Guru Nanak Dev University, Amritsar on March 06 - 07, 2017
3. Synthesis, Characterization and Application of polyaniline-zirconium phosphoborate based ion exchange nanocomposite membrane; Prit Pal Singh, 9<sup>th</sup> National Seminar on New Paradigm in Chemical Sciences: Synthetic and Analytical Perspectives-2017 (NPICS:SAP-2017) held at Punjabi University, Patiala on February 09–10, 2017.
4. Education about or for Sustainable Development, Bir Bikram Singh and Prit Pal Singh, 3<sup>rd</sup> International Conference on Sustainable Development through Green Initiatives held at Sri Guru Granth Sahib World University, Fatehgarh Sahib on March 01–02, 2016.
5. Study on Effect of MWCNTs on Electrochemical Properties of Zr (IV)PB Ion Exchange Membrane, Sandeep Kaushal and Prit Pal Singh, Recent Advances in Chemical, Biological and Environmental Sciences (RACES-2016) held at Multani Mal Modi College, Patiala on February 19–20, 2016.
6. Synthesis and Applications of polyaniline-zirconium phosphoborate nanocomposite as Cd (II) selective electrode, antibacterial agent and photocatalyst, Sandeep Kaushal and Prit Pal Singh, 8<sup>th</sup> National Seminar on New Paradigm in Chemical Sciences: Synthetic and Analytical Perspectives-2016 (NPICS:SAP-2016) held at Punjabi University, Patiala on February 04–05, 2016.

7. Electrochemical studies on Zinc oxide-zirconium (IV) phosphate ion exchange membrane, SandeepKaushal and Prit Pal Singh, 7<sup>th</sup> National Seminar on Synergic Aspects of Chemical and Other Sciences –2015 (SACOS-2015) held at Punjabi University, Patiala on February 19–20, 2015.
8. Synthesis and Characterization of Polyaniline Zirconium (IV) Boratophosphate and its Application as Photocatalytic and Antimicrobial agent, SandeepKaushal and Prit Pal Singh, National Seminar on Recent Advancement and Developments in Chemical Sciences (RADCS–2015) held at DAV College, Abohar on February 09, 2015.
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10. Study of Barium (II) selective electrode based on zirconium (IV) phosphoborate, SandeepKaushal and Prit Pal Singh, Multidisciplinary National Conference on Innovative Trends in Science, Technology and Management (MNCITSTM-2014) held at Sri Sai University, Palampur, HimachalPardesh on July 05–06, 2014.
11. Synthesis and characterization of nanocomposite inorganic ion exchanger (ZrSbP), SandeepKaushal and Prit Pal Singh, National Seminar on Recent Trends in Materials, Energy & Environment (NSRTMEE-2014) held at Sri Sai University, Palampur, HimachalPardesh on January 18, 2014.
12. Synthesis and Characterization of Schiff's Base of N-Acetyl Isatin and its derivatives, Prit Pal Singh, 3rd National Conference on Recent Advances in Chemistry and Environment Science (RACES-2011) held at Multani Mal Modi College, Patiala on January 30–31, 2011.
13. Determination of some metal ions in real life samples by N-donor based ion selective electrodes, Prit Pal Singh, 3rd National Conference on Recent Advances in Chemistry and Environment Science (RACES-2011) held at Multani Mal Modi College, Patiala on January 30–31, 2011.
14. Structural Analysis of Some Inorganic Ion Exchange Materials, S.K. Mittal, Prit Pal Singh, Harish Sharma and Ashok Kumar, National Conference on Materials & Related

Technologies held at Thapar Institute of Engg. & Technology (Deemed University), Patiala on September 19–20, 2003.

15. Exchange kinetic studies on zirconium antimonophosphate, S.K. Mittal & Prit Pal Singh, Third National Symposium in Chemistry (NSC–3) held at Punjab University, Chandigarh from February 2–4, 2001
16. Structural studies on crystalline tin(IV) arsenoantimonate, S.K. Mittal, O.P. Pandey & Prit Pal Singh, Thermans–2000, Twelfth National Symposium and Workshop on Thermal Analysis held at DDU Gorakhpur University, Gorakhpur from March 26–29, 2000.
17. Electrochemical and thermodynamical studies on zirconium phosphotungstate based heterogeneous membranes, S.K. Mittal & Prit Pal Singh, Euro Membrane 99 Conference held at Leuven (Belgium) from September 19–22, 1999.