

CURRICULUM VITAE

Name: *Dr. Jaspreet Singh*
Father's Name: *Shri. Harnek Singh*
Designation: *Assistant Professor (stage III)*
Present Address: Department of Chemistry,
Punjabi University Patiala
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Language Known : Punjabi, Hindi, English & French

Class	Board/University	Year	%age/Division
Matric	C.B.S.E. New Delhi	1990	70 / 1 st
B.Sc.	H.P.U. Shimla	1996	64 / 1 st
M.Sc.	H.P.U. Shimla	1998	64 / 1 st
Ph.D. (Organometallics)	Panjab University, Chandigarh	2003	-
General Course on Intellectual Property Rights-DL-101	World Intellectual Property Rights Organization, Geneva, Switzerland	2009	94/1 st
Masters in Buisness Management (MBA)	Punjabi University, Patiala, India	2012	65/1 st

OUTSTANDING ACHIEVEMENTS:

- **Three Technologies commercialized.** Two of the technologies cater to the manufacturing of flexible circuit. The flexible circuit market has been pegged currently at \$10 billion which is expected to hit \$12 billion in 2015. This technology has the potential to revolutionize the manufacturing of flexible circuit as it greatly reduces the cost and waste generation by many folds.

The third technology concerns with the protection of metal parts from corrosion without affecting the conductivity of the metal.

- **Technical Co-founder** and member of the **Technical Advisory Board** of **Averatek Corp.**, a flexible circuit manufacturing company, Santa Clara, CA, USA.
- **Visiting Scientist** at SRI International (Formerly **Stanford Research Institute**), Menlo Park, California, USA.
- **Visiting Scientist** at Clean Energy Research Centre, University of South Florida, Tampa, Florida, USA.

- Youngest speaker to deliver an invited lecture at 9th, International Conference on the Chemistry of Selenium and Tellurium, IIT, Bombay, India (2004).
- Senior Research Fellowship, CSIR, New Delhi, H.R.D. Ministry of India (National Level, only 20-30 from all around India are selected for this fellowship in chemistry).
- **Resource Person**, Academic Staff College, Himachal Pradesh University, Shimla, India.
- Resource Person at Rayat and Bahra Institute of Engineering and Bio-technology, Mohali campus, Punjab, India.
- Organizing Secretary, National Seminar on Recent Trends in Chemistry-2009, Department of Chemistry, Punjabi University, Patiala.
- State Evaluator and Member of State Organizing Committee of National Children Science Congress.
- Co-organizing Secretary, National Seminar on Emerging Trends in Chemistry-2010, Department of Chemistry, Punjabi University, Patiala.

EXPERIENCE

- Senior Research Fellow at Panjab University, Chandigarh
- Lecturer-in-Chemistry at Sikh National College, Qadian, Gurdaspur from July 15, 2002 to Aug. 11, 2003
- **Visiting Scientist** at SRI International (Formerly **Stanford Research Institute**), Menlo Park, California, USA, for three years.
- Hostel Warden, Shaheed Bhagat Singh Hall, Punjabi University, Patiala, from Nov-2004 to Sept. 2005
- **Visiting Scientist** at Clean Energy Research Centre, University of South Florida, Tampa, Florida, USA.
- Assistant Professor (Stage III), Department of Chemistry, Punjabi University, Patiala, India Since Aug, 2003.

AREA OF WORK

- Synthesis, Characterization and Applications of Palladium Complexes
- Metal printing using inkjet printer, screen printer, pad printer and gravure printer
- Formulations of screen printing inks
- Metal coatings for electronic applications
- Electroplating and electroless metal coating
- Corrosion protection coatings on metals

- Thermal and Thermochemical Energy Storage Systems in Concentrated Solar Power Plants (CSP)
- Development and utilization of Organochalcogen Chemistry especially the Selenium and Tellurium Chemistry.

RESEARCH GUIDANCE EXPERIENCE

1. M. Phil = Five
2. Ph.D. = One
3. Ph.D. = Two Students Registered for their Ph.D.

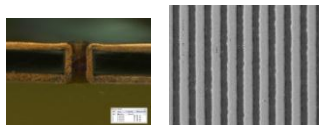
PROJECTS

- Product development project entitled, “Development of self-assembled molecular coating on metals for corrosion resistance without affecting the conductivity of the metal”, at SRI International. **Completed and successfully transferred to the manufacturing scale.**
- Product development project entitled, “Development of a chemical process to deposit copper/nickel on flexible and conformal substrates”, at SRI International. **Completed and a company named Averatek Corporation, Santa Clara, California, USA, has started manufacturing the product based on this technology.**
- Research project entitled, “Design, Synthesis, Characterization and Applications of Pyridylthio/selenocarbonyl Based Ligands and Pyridyl Carboxamide Chalcogen (S, Se and Te) Compounds”, **CSIR**, New Delhi, India, for funding.
- Research project entitled, “Development of Coatings to increase the Stability of Electroless Solutions: An Endeavor to Decrease the Release of Constituent Toxic Chemicals into the Environment” **Ministry of Environment and Forest**, New Delhi.

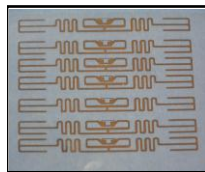
PRODUCTS DEVELOPED AND COMMERCIALIZED



Corrosion protective coating on metal parts, which withstands 1000 hours salt spray and sulfur fog test. These parts are now *manufactured* by **CSL Inc.**, at Santa Clara, California USA.



Adhesiveless flexible circuit materials with fully metallized microvias which offer better performance and low cost alternative to the one currently available in the market ([Averatek Corp.](#))



Alien RFID antennae formed by inkjet printing and fully additive process on polyester



Encapsulated Phase change material for thermal Energy Storage System in Concentrated Solar Power Plant (CSP)

LIST OF PUBLICATIONS

1. **Jaspreet S. Dhau**, A. Singh, **Y. Kasetti**, P.V. Bharatam, P. Brandão V. Félix and K.N. Singh, "A Study on the BF_3 -Directed Lithiation of 2-Picoline and 2,3-Lutidine," *Tetrahedron*, 69, 10284, **2013**.
2. **Jaspreet S. Dhau** and A. Singh, "A Study on the BF_3 -Directed Lithiation of 2-Picoline and 2,3-Lutidine," *J. Organomet. Chem.* 749, 109, **2014**.
3. **Jaspreet S. Dhau**, R. Dhir, A. Singh, P. Brandão and V. Félix, "Synthesis and characterization of 4-(dimethylaminopyridyl)chalcogenides (Se, Te): X-ray structure of bis(4-dimethylamino-2-pyridyl)diselenide, bis(4-dimethylamino-2-pyridylselenenyl) methane and 4-dimethylamino-2,6-bis(methylselenenyl)pyridine," *Inorg. Chim. Acta*, 404, 160, **2013**.
4. **Jaspreet S. Dhau**, A. Singh, A. Singh, B. S. Sooch, "A Study on the Antioxidant Property of Pyridylselenium Compounds and their Slow Release from Poly(acrylamide) Hydrogels," *Phosphorus, Sulfur, Silicon*, DOI: 10.1080/10426507.2013.844143, **2013**.
5. **Jaspreet S. Dhau**, A. Singh, **Y. Kasetti**, and P.V. Bharatam, "Complex Induced Proximity Effect in the Regioselective Lithiation of Pyridine Derivatives," *Eur. J. Org. Chem.*, 2012, 1746, **2012**.

6. **Jaspreet S. Dhau**, A. Singh, A. Singh, B.S. Sooch, P. Brandão and V. Félix "Synthesis, Characterization and X-ray Structure of 3,4-Lutidinyl-, 3- and 4-Picolylselenium Compounds," *Inorg. Chim. Acta*, , 392, 335, **2012**.
7. **Jaspreet S. Dhau**, A. Singh and R. Dhir,"Synthesis and Characterization of 3,5-Lutidinylchalcogen and -Dichalcogen (S, Se) Compounds: X-ray Crystal Structure of Bis(3,5-dimethyl-2-pyridyl) diselenide and 2,6-Bis(selenomethyl)-3,5-lutidine," *J. Organomet. Chem.* 696, 2008, **2011**.
8. **Jaspreet S. Dhau**, R. Dhir and A. Singh, "A One Pot Synthesis of Organochalcogen (S, Se) Compounds Derived from 4-Chloro- and 4-Methoxy-N,N-diisopropylpyridine-2-carboxamide: X-ray Structure of 4-Methoxy-3-(sulfanyl methyl)- and 4-Chloro-3-(selenenylbenzyl)-N,N-diisopropylpyridine-2-carboxamide," *J. Organomet. Chem.* 696, 2406, **2011**.
9. S.K. Sharma, **Jaspreet S. Dhau**, N. Saraiya, J. Sallo and A. Beavers, "A Non-vacuum Process for Deposition of Thin Copper on Flexible Base Materials", *OnBoard Technologies*, Dec., **2009** and IPC APEX Expo, *1*, 1-33, **2009**, ISBN: 978-161567082-6.
10. K.K. Bhasin and **Jaspreet Singh**, "A Novel and Convenient Synthesis towards 2-Pyridylselenium Compounds: X-ray Crystal Structure of 4,4'-Dimethyl-2,2'-Dipyridyl Diselenide and Tris(2-pyridylseleno)methane", *J. Organomet. Chem.*, 658, 71, **2002**.
11. S. Dey, V.K. Jain, **Jaspreet Singh**, V. Trehan, K.K. Bhasin and B. Varghese. "Pyridine- and 3-/6-Methylpyridine-2-telluroate Complexes of Palladium (II) and Platinum (II)", *Eur. J. Inorg. Chem.*, 744, **2003**. (Cited 38 times)
12. K.K. Bhasin, V.K. Jain, H. Kumar and **Jaspreet Singh**, "Preparation and Characterization of Methyl Substituted 2,2'-Dipyridyl Diselenides/Ditellurides and Their Derivatives", *Synth. Commun.*, 33, 977, **2003**.
13. K.K. Bhasin, B.S. Bhandal, **J. Singh**, N. Singh, P. Singh and K.N. Singh, "Preparation and Characterization of Pyridylselenium/tellurium Derivatives through BF₃ Complexed Pyridyl Carbanion", *Synth. Commun.* 32, 1319, **2002**.
14. K.K. Bhasin, **J. Singh** and K.N. Singh "Preparation and Characterization of 2,2'-Dipicolyl Diselenide and Their Derivatives", *Phosphorus, Sulfur and Silicon*, 177, 598, **2002**. (Cited 12 times)
15. K.K. Bhasin, P. Venugopalan and **J. Singh**, "Preparation and Characterization of Methyl Substituted 2,2'-Dipyridyl Diselenides/-Ditellurides: X-ray Crystal Structure of 4,4'-Dimethyl-2,2'-dipyridyl Diselenide", *Phosphorus, Sulfur and Silicon*, 177, 2579, **2002**.
16. K.K. Bhasin, N. Singh, V Trehan, P.K. Jain and **Jaspreet Singh**, "An Insight into the Reductive Cleavage of Tellurium-Tellurium Bond in Various 2,2'-Dipyridyl Ditellurides Using Hydrazine hydrate", *Phosphorus, Sulfur and Silicon*, 178, 753, **2003**.
17. **Jaspreet Singh** and K. K. Bhasin, "A Novel One Pot Synthesis of 2-Pyridyl Chalcogenides (Se, Te) Through Bromine-Magnesium Exchange Reactions", Proc. 9th ICCST, *Phosphorus, Sulphur, Silicon*, 180, 1101, **2005**.

18. K.K. Bhasin, H. Kumar, V. Trehan and **Jaspreet Singh**, "Synthesis and Characterization of Some Bromosubstituted Symmetrical Dipyridyl Ditellurides and X-ray Structure of 2,2'-Dipyridyl Ditelluride", Proc. 9th ICCST, *Phosphorus, Sulphur, Silicon*, 180, 1099, **2005**.
19. K.K. Bhasin, V. Trehan and **Jaspreet Singh**, "Regioselective Synthesis of Symmetrical and Unsymmetrical Pyridyl Chalcogens (Se, Te) Using Grignard Reagents: X-ray Structure of Bis(2,5-dibromo-3-pyridyl)diselenide", Proc. 9th ICCST, *Phosphorus, Sulphur, Silicon*, 180, **2005**.
20. Four abstract published in *ChemInform* (Wiley-VCH), **2002, 2003, 2005** and **2012**.

LIST OF PATENTS (Granted)

1. **Inventors: Jaspreet S. Dhau** and S.K. Sharma, *Reduced Porosity Copper Deposition*; **US 7989029B1**; **Country:** United States, (**2011**).
2. **Inventors S.K. Sharma** and **Jaspreet S. Dhau**, *Flexible Circuits*; **US 7981508B1**; **Country:** United States, (**2011**).
3. **Inventors: S.K. Sharma** and **Jaspreet S. Dhau**, *Flexible Circuit Chemistry*; **US 8,110,254B1**, **Country:** United States (**Feb., 2012**).
4. **Inventors S.K. Sharma** and **Jaspreet S. Dhau**, *Flexible Circuits*; **US 8,124,226**; **Country:** United States, (**Feb. 2012**).
5. **Inventors: S.K. Sharma, R. Shankar** and **Jaspreet S. Dhau**, *Molecular Coatings on Metal Surfaces*; **US 8,252,381**, **Country:** United States (**Aug. 2012**).
6. **Inventors: S.K. Sharma, F. Fornasiero** and **Jaspreet S. Dhau**, *Systems and Methods for Conductive Pattern Formation*; **US Application No. 12/142,577**; **Country:** United States (**Nov., 2013**).

LIST OF PATENTS (Filed)

1. **Inventors: S.K. Sharma** and **Jaspreet S. Dhau**, *Flexible Circuit Chemistry*; **US Application No. 20130230667A1**, **Country:** United States, (**Published Sep. 2013**).
2. **Inventors: S.K. Sharma** and **Jaspreet S. Dhau**, *Flexible Circuit Chemistry*; **US Application No. 20120100286A1**, **Country:** United States, (**Published Apr. 2012**).
3. **Inventors: Jaspreet S. Dhau, Y. Goswami, L. Stefanakos** and **C. Jotshi**, *Encapsulation of Thermal Energy Storage Media*; **Attorney Doc. No. 01753970**, **Country:** United States, **2012**

4. **Inventors:** S.K. Sharma and **Jaspreet S. Dhau**, *Flexible Circuit Printing*; **US Application No. 11/854,274**, **Country:** United States, **(Sept. 2007)**.
5. **Inventors:** S.K. Sharma, R. Shankar and **Jaspreet S. Dhau**. Adhesiveless Metal Deposition on a Flexible Substrate; **Country:** United States; **Application No. 11/522,290**; **(2006)**.

CONFERENCES/SEMINARS

1. Delivered an *Invited lecture* on “Newer Aspects in the Field of Pyridyl Chalcogen (Se, Te) Compounds”, at 9th, International Conference on the Chemistry of Selenium and Tellurium, IIT, Bombay, India (2004).
2. Presented a paper in the form of a poster at 9th, International Conference on the Chemistry of Selenium and Tellurium, IIT, Bombay, India (2004).
3. Participated and paper entitled “On the preparation of 2-Picolyl Selenium/Tellurium Derivatives” was presented at 8th, International Conference on the Chemistry of Selenium and Tellurium, Sao-Paulo Brazil from August 6-11 (2000).
4. Paper entitled “Preparation and Characterization of Methyl Substituted-2,2’-Dipyridyl Diselenides/Ditellurides” was presented at 8th, International Conference of Selenium and Sao-Paulo Brazil from August 6-11 (2000).
5. Participated and a paper entitled “Preparation and Characterization of 2,2’-Dipicolyl Diselenide”, was presented at 3rd National Symposium of Chemistry at P.U., Chandigarh (2001).
6. Paper presented at Indo-German Workshop held at P.U. Chandigarh (2001).
7. Participated in National Symposia at P.U. Chandigarh
8. Participated in Patent Awareness Workshop held on 29th Nov. 2004 at Central Research Institute (Ay.) Patiala
9. Participated in Intellectual Property Rights (IPRs) Awareness Workshop held at Punjabi University, Patiala, on 19-11-2008
10. Paper entitled, “Deposition of Thin Copper on Polymers for the Manufacturing of Adhesiveless Flexible Circuits” presented orally at 1st Annual Conference on Recent Advances in Chemical and Environmental Sciences, 2009.
11. Participated at Northern Regional Orientation Meet for State/District Academic Coordinators and Evaluators of National Children Science Congress, New Delhi.
12. Paper entitled, "Preparation of Organoselenium Compound Capable of Showing Heteroatom-Selenium Non-Bonded Interaction", presented at National Seminar on

Emerging Trends in Chemistry-2010, Department of Chemistry, Punjabi University, Patiala, India.

13. Paper entitled, "Preparation of Organosulphur Compounds Containing Substituted Heterocyclic Rings", presented at National Seminar on Emerging Trends in Chemistry-2010, Department of Chemistry, Punjabi University, Patiala, India.
14. Paper entitled, "A Comparative Account of Technologies Used for the Deposition of Copper on the Polyimide", presented at National Seminar on Emerging Trends in Chemistry-2010, Department of Chemistry, Punjabi University, Patiala, India.
15. Paper entitled, "Preparation and Characterization of Dinicotinyl Diselenide and Unsymmetrical Nicotinyl Selenides presented at National Seminar on Emerging Trends in Chemistry-2010, Department of Chemistry, Punjabi University, Patiala, India.
16. Delivered an *Invited lecture* entitled, "Flexible Circuit Boards: Past and Present", at 2nd Annual Conference on Recent Advances in Chemical and Environmental Sciences, Patiala, India, 2010.
17. Paper entitled, "Studies on the antimicrobial potential of Organochalcogen", Presented at International Conference on Genomic Science, School of Biological Sciences, Madurai Kamaraj University, Madurai, India Nov. 12-14, 2010.
18. Invited lecture, Govt. Science College, Jagraon, Punjab, India, Feb. 2012