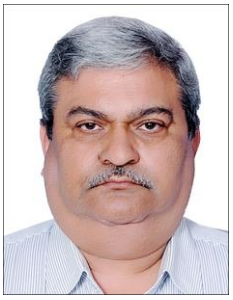
BIO-DATA

NAME **ASHOK KUMAR**
SURNAME **MALIK**
FATHER'S NAME **Prof. ABHIMANYU**
DATE OF BIRTH **18th October, 1966**
ADDRESS

Official address:
Dr. Ashok Kumar Malik
Professor
Department of Chemistry
Punjabi University, Patiala ,
Punjab, India
✉: malik_chem2002@yahoo.co.uk
☎:0175-2353447 (Resi), 09815551332 (Mobile)

Permanent Home Address:
Dr. Ashok Kumar Malik
42, Upkar Nagar
Factory Area
Upkar Nagar
Patiala- 147 002
Punjab, India



ACADEMIC CAREER

Examination Passed	Board/ University	Year	Marks and per centage	Division Class/ Grade/ Distinction	Subjects
B.Sc.	Pbi. Univ., Patiala, Punjab, India	April, 1985	472/650 (72.6%)	**First (11th in Merit in the University)**	Botany, Zoology, Sanskrit, Chemistry
M.Sc.	Pbi. Univ., Patiala, Punjab,	July, 1987	720/1200 (60%)	**First**	Inorganic Chemistry
M.Phil	Pbi. Univ., Patiala, Punjab, India	July, 1989	4.968/50 (73%)	**First**	Inorganic/ Analytical Chemistry
Ph.D	Pbi. Univ., Patiala, Punjab, India	October, 1991	Thesis topic: Spectrophotometric and polarographic examination of some pesticides	-	Inorganic/ Analytical Chemistry

h-index: 39 (scopus), Number of Citations : 6,445

Author ID:7402153157
ORCID No:0000-0003-1045-6848

PRESENT POSITION

At present working as a Professor Department of Chemistry, Punjabi University, Patiala, Punjab, India.

SPECIALISATION

Inorganic Chemistry/ Environmental Analytical Chemistry/ Instrumentation in Analytical Chemistry

30 ***FELLOWSHIP'S AWARDED***

Year (from/to)		Affiliate	City	Country	Remark
1988.01	1990.01	Punjabi University , Patiala	Patiala	India	JRF (Junior Research Fellow)
1990.02	1991.09	Punjabi University , Patiala	Patiala	India	SRF (Senior Research Fellow)
1998.05	1999.12	Institute for Instrumental Analysis, Forschungszentrum Karlsruhe, Germany	Karlsruhe	Germany	AvH Fellowship
2000.02	2000.09	Complutense University, Madrid, Spain, supported by the Ministry of Education and Science, Spain	Madrid	Spain	Invited Scientist
2004.04	2004.04	GSF, Research Centre, Munich, Germany	Munich	Germany	DST-DAAD, PPP program
2004.05	2004.07	Central Division of Chemical analysis, Divisi6n of Inorganic mass spectrometry, Forschungszentrum Juelich, Juelich, Germany	Juelich	Germany	AvH Fellow (Reinvited)
2005.05	2005.05	GSF, Research Centre, Munich, Germany	Munich	Germany	DST-DAAD, PPP, program
2006.07	2006.09	GSF, Research Centre, Munich, Germany	Munich	Germany	AvH Fellow (Reinvited)
2008.05	2008.08	GSF, Research Centre, Munich, Germany	Munich	Germany	AvH Fellow (Reinvited)
2008.11	2008.12	Regensburg University, Regensburg, Germany	Munich	Germany	DST-DAAD, PPP program
2009.05	2009.10	University of Valencia, Valencia, Spain	Valencia,	Spain	Guest Faculty (Invited Professor)
2010.05	2010.07	Regensburg University, Regensburg, Germany	Regensburg	Germany	AvH Fellow (Reinvited)
2015.04	2015.05	GSF, Research Centre, Munich, Germany	Munich	Germany	AvH Fellow (Reinvited)

2015.05	2015.07	Regensburg University, Regensburg, Germany	Regenburg	Germany	AvH Fellow (Reinvited)
2017.04	2017.06	GSF, Research Centre, Munich, Germany	Munich	Germany	AvH Fellow (Reinvited)
2018.04	2018.09	Deakin University, Australia	Deakin	Australia	Senior Endeavour Executive Fellowship by Australian Research Council
2019.03	2019.08	Hanyang University, Department of Civil and Environmental Engineering, Seoul, South Korea	Seoul	South Korea	Visiting fellowship (Professorship)
2021-10	2023.19	**Mid term career research award grant by the UGC, New Delhi, 2021**.Rs. 10,00,000/-	Patiala	India	Award
2022.05	2022.07	Helmholtz Munich, Germany	Munich	Germany	AvH Fellow (Reinvited)

REFEREE

1. **Bulletin des Societies Chimiques Belges, Belgium**
2. **International JAOAC (USA).**
3. **Italian Journal of food science**
4. **Journal of Chromatography A (Elsevier, USA)**
5. **Electrophoresis (Springer, USA)**
6. **Biochemical Engineering (Elsevier, USA)**
7. **Journal of Hazardous material (Elsevier, USA)**
8. **Environmental letters**
9. **Analytical and bioanalytical chemistry**
10. **Environmental science and technology**
11. **Total analytical chemistry journal**
12. **Journal of Separation Science (Springer, USA)**
13. **Talanta (Elsevier, USA)**
14. **Many other journals……**

MEMBERSHIP OF EDITORIAL BOARD

1. **Member of the Editorial board of the Euroasia analysis journal.**
2. **Member of the Editorial board of Trends in Analytical Chemistry (Elsevier's Journal.*)***

52 ***PROFESSIONAL CAREER***

Year (from/to)		Affiliate	City	Country	Remark
1988.01	1990.01	Punjabi University , Patiala	Patiala	India	JRF (Junior Research Fellow)
1990.02	1991.09	Punjabi University , Patiala	Patiala	India	SRF (Senior Research Fellow)
1991.10	1992.07	D. A. V College, Hoshiarpur, Punjab; India	Hoshiarpur	India	Lecturer
1992.08	1999.12	D. A. V. College, Jalandhar, Post-graduate Dept., of Chemistry, Punjab	Jalandhar	India	Lecturer (Senior scale)
1998.05	1999.12	Institute for Instrumental Analysis, Forschungszentrum Karlsruhe, Germany	Karlsruhe	Germany	AvH Fellowship
2000.02	2000.09	Complutense University, Madrid, Spain, supported by the Ministry of Education and Science, Spain	Madrid	Spain	Invited Scientist
2000.10	2003.08	Department of Chemistry, G. N. D. University, Amritsar, Punjab, India	Amritsar	India	Lecturer
2003.08	2000.02	Department of Chemistry, Punjabi University, Patiala, Punjab, India	Patiala	India	Reader/Associate Professor
2004.04	2004.04	GSF, Research Centre, Munich, Germany	Munich	Germany	DST-DAAD, PPP program
2004.05	2004.07	Central Division of Chemical analysis, División of Inorganic mass spectrometry, Forschungszentrum Juelich, Juelich, Germany	Juelich	Germany	AvH Fellow (Reinvited)
2005.05	2005.05	GSF, Research Centre, Munich, Germany	Munich	Germany	DST-DAAD, PPP, program
2006.07	2006.09	GSF, Research Centre, Munich, Germany	Munich	Germany	AvH Fellow (Reinvited)
2008.05	2008.08	GSF, Research Centre, Munich, Germany	Munich	Germany	AvH Fellow (Reinvited)
2008.11	2008.12	Regensburg University, Regensburg, Germany	Munich	Germany	DST-DAAD, PPP program
2008.12	2011.05	CDLU, Sirsa, Haryana	Sirsa,	Haryana	Prof. and Chairperson

2012.02	Till now	Department of Chemistry, Punjabi University, Patiala, Punjab, India	Patiala	India	Professor
2009.05	2009.10	University of Valencia, Valencia, Spain	Valencia,	Spain	Guest Faculty (Invited Professor)
2010.05	2010.07	Regensburg University, Regensburg, Germany	Regensburg	Germany	AvH Fellow (Reinvited)
2015.04	2015.05	GSF, Research Centre, Munich, Germany	Munich	Germany	AvH Fellow (Reinvited)
2015.05	2015.07	Regensburg University, Regensburg, Germany	Regenburg	Germany	AvH Fellow (Reinvited)
2017.04	2017.06	GSF, Research Centre, Munich, Germany	Munich	Germany	AvH Fellow (Reinvited)
2018.04	2018.09	Deakin University, Australia	Deakin	Australia	Senior Endeavour Executive Fellowship by Australian Research Council
2019.03	2019.08	Hanyang University, Department of Civil and Environmental Engineering, Seoul, South Korea	Seoul	South Korea	Visiting fellowship (Professorship)
2022.05	2022.07	Helmholtz Munich, Germany	Munich	Germany	AvH Fellow (Reinvited)

Administrative responsibilities

1 Chairperson Department of Chemistry, CDLU, Sirsa (2008-2011)

2 Head, Department of Chemistry, Punjabi University, Patiala (2017-2020)

3 Director, International Students, Punjabi University, Patiala (2020)

4 Director Planning and Monitoring, Punjabi University, Patiala (2021-2022)

Ph.D. students

1 Jatinder Singh, Aulakh: Development of sensitive analytical methods for the trace analysis of some pesticides, Degree Awarded : March 2008 (He was awarded DAAD, Germany fellowship for research work in Germany and at presently working as Assistant Professor in the Department of Chemistry, Punjabi university, Patiala.

2 Varinder Kaur: Studies on the analysis of some toxic metal ions in environmental samples by using SPME-HPLC and derivative spectrophotometry, Degree Awarded : January, 2008 (She was awarded Kothari Research Fellowship for her post-docotoral research in P.U. Chandigarh and working as Assistant Professor, Panjab University,

Chandigarh).

3 **Gaurav: SPME-HPLC studies of some explosives (Status : Completed and also Completed DRDO, New Delhi Research Project and presently working as Assistant Professor, Rampura Phul, Punjabi university, Patiala)**

4 **Ashwini Kumar: Physico analytical studies of some organic compounds (: Completed and Nominated for the DST, New Delhi - DAAD (Germany), research project. Presently working as Assistant Professor, H.P.Govt. College)**

5 **Manpreet Kaur: HPLC-UV and spectrophotometric studies of some pesticides (Status : Thesis Submitted) and presently working as Assistant Professor, A.S. College, Khanna under Panjab university, Chandigarh)**

6 **Susheela Rani : SPE-HPLC –UV determination of some drugs (Status : Doing) presently working as Assistant Professor in the Department of Chemistry, Punjabi university, Patiala. (Status : Thesis Submitted)**

7 **Kuldeep Kaur (Awarded) Presently working as Assistant Professor, Mata Gujari College, Fatehgarh Saheb, Punjab, India.**

8 **Jyoti Saini NANOPARTICLES BASED ELECTROCHEMICAL AND OPTICAL MINIATURIZED BIOSENSOR FOR THE DETECTION OF ORGANOPHOSPHORUS PESTICIDES IN SOIL, FOOD AND WATER SAMPLES (Status : Awarded)**

9 **Rajesh Kumar DEVELOPMENT OF NEW METHODS FOR THE DETERMINATION OF TOXIC METAL IONS USING VARIOUS CHROMATOGRAPHIC TECHNIQUES (Status : Submitted)**

10. **Ripneel Kaur DEVELOPMENT OF CHROMATOGRAPHIC METHODS FOR THE DETERMINATION OF DRUGS AND THEIR APPLICATIONS (Status : Doing)**

11. **Heena DEVELOPMENT OF NEW METHODS FOR THE DETERMINATION OF TOXIC METAL IONS USING VARIOUS CHROMATOGRAPHIC TECHNIQUES (Status : Awarded)**

12. **Neha Sharma SYNTHESIS, CHARACTERIZATION, COMPUTATIONAL AND ANALYTICAL STUDIES OF PYRIDINE AND PYRIMIDINE HETEROCYCLIC COMPOUNDS (Status: Awarded)**

13. **Balwinder Kaur SYMTHESIS, CHARACTERIZATION OF SEMICONDUCTOR NANO MATERIAL FOR PHOTOCATALYTIC AND SENSING APPLICATIONS (Status: Awarded)**

14. **Ramandeep Kaur TRACE ANALYSIS OF TOXIC SUBSTANCES IN THE ENVIROMENT**

USING CHROMATOGRAPHIC TECHNIQUES **(Status: Awarded)**

15 **Subhash Chand : STUDIES IN PYRIMIDINES, IT'S ANALOGUES AND NEW SYNTHETIC METHODS" (Status: Awarded)**

16 **Irshad Mohiuddin Development of preconcentration methods coupled with chromatographic techniques for the trace analysis of drugs (Status: Awarded)**

17 **Asnake Lealam (Status: Awarded)**

18 Aman Grover Synthesis and characterization of surface modified layered double hydroxide composites for the analysis of pollutants (Status: Completed)

19 Shikha : DEVELOPMENT OF MOLECULARLY IMPRINTED CORE SHELL NANOMATERIALS AND THEIR APPLICATION FOR IDENTIFICATION AND SEPARATION OF EMERGING CONTAMINANTS IN FOOD AND ENVIRONMENTAL SAMPLES. (Status: Awarded)

20 Deepika : Investigation of photocatalytic and sensing applications of nanostructures AND Nanostructure IMPREGNATED METAL ORGANIC FRAMEWORKS (Status: doing)

21 Manpreet Kaur : Synthesis, Characterization And Applications of Schiff Base Metal organic frameworks (Status: Awarded)

22 Promila Sharma "SYNTHESIS, CHARACTERIZATION AND APPLICATIONS OF PYRAZOLINE COMPOUNDS" (Status: awarded)

23 Rajpal Verma: SYNTHESIS AND APPLICATIONS OF MOFs FOR PRECONCENTRATION AND DETECTION OF ORGANIC POLLUTANTS (Status: doing)

24 Gurpreet Singh (Status: doing)

25 Seema Maheshwari (Status: doing)

26 Kirandeep Kaur (Status: doing)

27 Neha Sharma (Status: doing)

Member of professional bodies

1. **Member of the board of undergraduate and post-graduate studies, Department of Chemistry, Punjabi University, Patiala**
2. **Member of the board of studies, Department of Chemistry, PTU, Kapurthala, Punjab.**
3. **Member of the board of studies, Department of Chemistry, Mata Gujari Collage Fatehgarh Saheb,**
4. **Member of the board of studies, Department of Chemistry, Khalsa College, Patiala**

Member of Governing bodies/funding agencies

1. **Member of the Governing body of the Pondicherry Engineering College, Pondicherry.**
2. **Member of the Russian Foundation of Science for the grant of research projects.**
3. **Reviewer for the research grants with the Czech republic**
4. **Considered as Chairman for the NAAC peer review committee.**

Special attainments of Ph.D. students

1 Dr. Varinder Kaur awarded Kothari Fellowship and appointed as Assistant Professor in Chemistry Department, Punjab University, Chandigarh

2 Dr. Jatinder Aulakh, awarded DST-DAAD, DAAD Fellowship and appointed in Chemistry Department, Punjabi University, Patiala.

3 Dr. Ashwini Kumar Awarded DST-DAAD, DAAD Fellowship and appointed in Chemistry Department,Govt College ,Lecturer, HP.

4 Mrs. Ramandeep Kaur awarded Raman Charpak Fellowship in France to work with Prof. Maurice Millet, Strassburg University, Strassburg.

5 Most of the Ph.D. students after the award of Ph.D . Degree are working in reputed institutions.

RESEARCH PROJECTS

Sr. No	Titel of Project	Funding Agency	Amount Sanctioned	Time period	Status
1	Spectrophotometric	(Project No. 4-	Rs. 25,000/-	1995-96	Completed

	determination of toxic metal ions in environmental samples	4/95, UGC, New Delhi).			
2	Solid-phase microextraction – HPLC : A new technology; Application to analysis of pesticides,	CSIR, New Delhi,	Rs. 6,50,000/-	2004-2007	Completed
3	Rapid analysis of pesticides and metabolites in food stuffs and environmental samples by solid phase micro extraction -high performance liquid chromatography (SPME-HPLC) By and capillary electrophoresis mass-spectrometry,	DST-DAAD project based research program, With Group leader Dr. Schmidt-Kopplin, GSF, Research Center, Germany	Rs. 4.50,000/-	2004	Completed
4	Solid-phase microextraction – HPLC : A new technology; Application to analysis of toxic metals	UGC, New Delhi, completed, FTR and utilization certificate submitted,	Rs. 8,67,000/-	2004	Completed
5	Solid-phase microextraction – HPLC : A novel technique; Application to analysis of explosives,	DRDO, New Delhi,	Rs. 14,39,150/-	2008-2011	Completed
6	Special Assistance programme of UGC, New Delhi,	Deputy Co-ordinator sanctioned to the Department of Chemistry,	Rs. 42,00,000/-	2010-2015	Completed

		Punjabi University, Patiala,			
7	Solid-phase microextraction – HPLC : Application to analysis of endocrine disrupters using fibres developed by sol-gel methods	-, CSIR, New Delhi, -	Rs. 12,00,000/-	2010-2013	Completed
8	SPME-HPLC with Segmented Columns and Simultaneous UV and Dual Electrochemical Detection: Application to the Selectivity Enhancement for the Determination of Explosives	DST-DAAD (P-180/2008).	Rs. 4.50,000/-	2013-2016	Completed
9	Special Assistance programme of UGC, New Delhi,	Deputy Co-ordinator sanctioned to the Department of Chemistry, Punjabi University, Patiala,	Rs. 75,00,000/-	2013-2018	Completed
10	Speciation of the toxic metal ions using High pressure liquid chromatography Completed	UGC, New Delhi, completed, FTR and utilization certificate submitted,	Rs. 9,43,500/-.	2017-2020	Completed
11	Development of Deep Eutectic solvents for the extraction of antidiabetic compounds from plants	VAJRA, SERB DST, New Delhi, India **International research project with** Prof. Dr. Philippe	**Expenditure upto about US $ 1,20,000/-**	2021-2023	Ingoing

		Schmitt-Kopplin, Helmholtz, Research Center, Munich, Germany. In progress.			
12	Miniaturised analytical systems	Sanctioned GIAN research project	**US$ 8,000/-**	2022	Completed
13	Synthesis of Luminescent metal-organic frameworks (LMOFs) based on Schiff base ligands for sensing applications	Mid term career research award grant by the UGC, New Delhi,	**Rs. 10,00,000/-**	2021-2022	Completed

RESEARCH STUDENTS GUIDED:

M.Sc. students

Sonam Bansal, Vaneet Kumar, Kuldeep Singh, Ranjot Singh, Gurvinder Kaur, Manju, Kanika, Swati, Deepika, Renu, Anuj Yadav, Vandana,

M. Phil. Students

Nutan, Manju, Priyanka, Suresh, Ramandeep Kaur, Ramandeep Kaur, Irshad, Shikha, Sandeep.

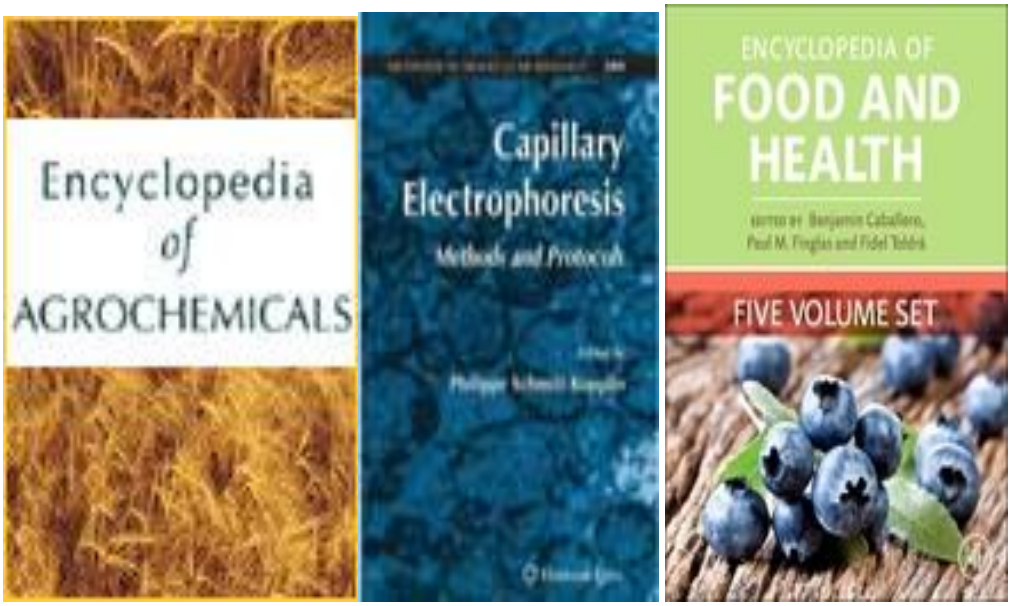
SPECIAL INVITATIONS

1. **Invited to contribute one chapter 'Dithiocarbamates' to The Encyclopedia of Agrochemicals, Published by John Willey and Sons, and to be Edited by Prof. J. R. Plimmer, USA. DOI: 10.1002/047126363X, Online ISBN: 9780471263630**

2. **Contributed two chapters to the capillary electrophoresis small ions to macromolecules, edited by Prof. Schmitt Kopplin, P. Published by Humana Press, USA. ISBN: 1588295397, EAN: 9781588295392**
   - **(A) Capillary electrophoretic analysis of metal ions**

(B) Capillary electrophoresis-UV analysis of organic pollutants

3. **Antidepressants: Pharmacology, Health Effects and Controversy**' to the book titled '**Antidepressants: Pharmacology, Health Effects and Controversy'**, **edited by Louis J. Mígne and Jason W. Post , Nova Science Publishers, USA, 2012. ISBN: 978-58829-539-2,**



4. **Speciation analysis in Food**, **Elsevier Publishers, Prof. Yolanda Pico Paperback ISBN: 9780128132661, e Book ISBN: 9780128132678**

5 **Spectroscopy: Types Elsevier Publishers , ISBN-10: 0123849535 ISBN-13: 9780123849533, AK Malik, R Kumar, and Heena, Punjabi University, Patiala, India Edited by Prof. Benjamin Caballero**

6 **Capillary electrophoresis of small ions , edited by Prof. Schmidt Kopplin, P. Published by Humana Press, USA. 2014, ISBN: 978-1-4939-6403-1**

7 **Nanostructure Impregnated MOFs for Photo-catalytic and Sensing Applications Aman Grover, Irshad Mohiuddin, Shikha Bhogal, Ashok Kumar Malik, and Jatinder Singh Aulakh**

8 **Metal-Organic Frameworks: Synthesis, Characterization and Applications**

Shikha Bhogala, Irshad Mohiuddina, Aman Grover, Sandeep Kumara, Kuldeep Kaur, Ashok Kumar Malik

LIST OF CONFERENCES ATTENDED About international conferences attended. Major conferences are:

1. **Indian Science Congress, Punjabi University, Patiala, Punjab, India**
2. **2ND Euroconference in Environmental Chemistry, Cordoba University, Spain (Awarded full board fellowship for attending the conference.) Oct. 1998**
3. **3RD Euroconference in Environmental chemistry, Chalkidiki, Greece. Oct. 1999**
4. **4th EUROCONFERENCE IN ENVIRONMENTAL CHEMISTRY, VISEGRAD, HUNGARY (AWARDED FULL BOARD FELLOWSHIP) SEPT., 2000**
5. **EUROANALYSIS 12 (FUNDED BY THE AvH FOUNDATION, BONN, GERMANY) 8-13 SEPT. 2002, DORTMUND, GERMANY**
6. **2005 ASIA PACIFIC WINTER CONFERENCE ON PLASMA SPECTROCHEMISTRY, CHIANG MAI, THAILAND, APRIL 25-30, 2005. SUPPROTED BY THE JOHN CANTLE SCIENCE FOUNDATION, USA IN THE FORM OF AN AWARD**
7. **NATIONAL SEMINAR IN CHEMISTRY, 2009, Punjabi University, Patiala, Punjab, India. INVITED LECTURE**
8. **ETSAC, 2009, SLIET, PUNJAB, LONGOWAL, 14-15, MARCH, 2009. INVITED LECTURE**
9. **INVITED LECTURE 2010 AT M.M. MODI COLLEGE, PATIALA**
10. **INVITED LECTURE AT A.S. COLLEGE, KHANNA, PUNJAB 2012**
11. **INVITED LECTURE AT M.M. MODI COLLEGE, PATIALA, PUNJAB, 2012**
12. **INVITED LECTURE AT POST GRADUATE COLEEGE, PUNJAB, 2013.**

13. INVITED LECTURE AT ACADEMIC STAFF COLLEGE, GNDU, AMRITSAR 2013

14 INVITED LECTURE AT ACADEMIC STAFF COLLEGE, KU, KURUKSHETRA 2014

15. INVITED LECTURE AT INTERNATIONAL CONFERENCE AT DR. S.S.S BHATNAGAR INSTITUTE OF CHEMICAL ENGINEERING AND TECHNOLOGY, PANJAB UNIVERSITY, CHANDIGARH 2014

16. INVITED LECTURE AT ACADEMIC STAFF COLLEGE, REFRESHER COURSE FOR ALLIED SCIENCES, PUNJABI UNIVERSITY, PATIALA, 2015

17 INVITED LECTURE AT ACADEMIC STAFF COLLEGE, REFRESHER COURSE FOR ENVIRONMENT SCIENCES, PUNJABI UNIVERSITY, PATIALA 2015.

18 INVITED LECTURE AT M.M. MODI COLLEGE, PATIALA, 2015

19 INVITED LECTURE AT GOVT. MOHINDERA COLLEGE, PATIALA, 2015.

20 INVITED LECTURE AT M.M. MODI COLLEGE, PATIALA, 2016

21 KEY NOTE ADDRESS AT KHALSA COLLEGE, BUDHLADA, 2017

22 INVITED LECTURE AT GJU, HISSAR, 2018

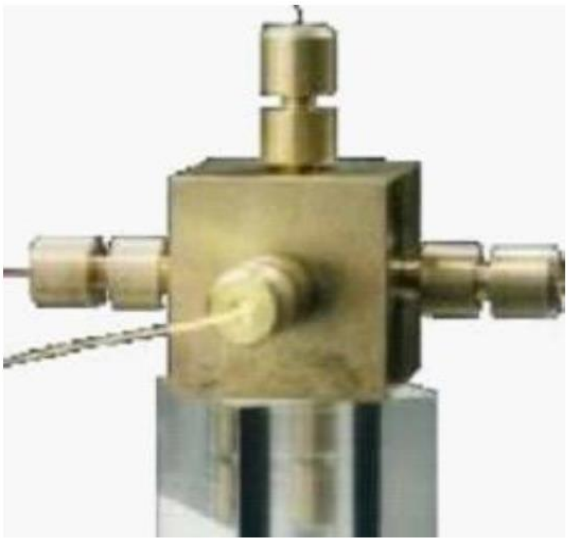
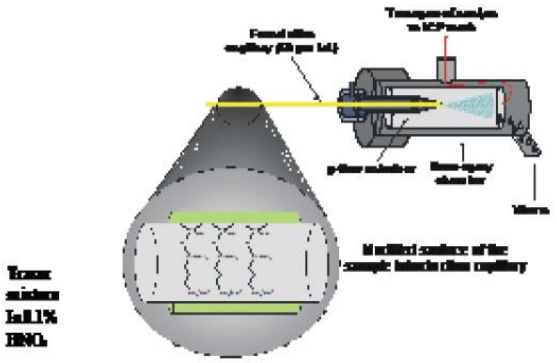
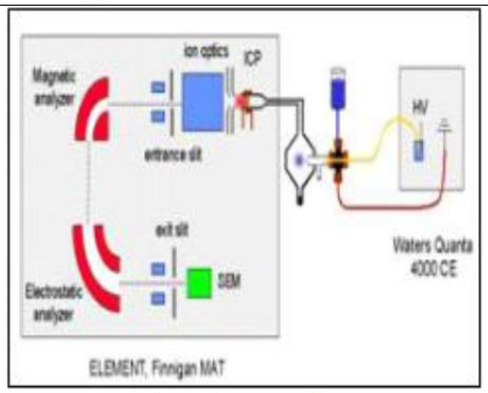
23 INVITED LECTURE AT KHALSA COLLEGE, BUDHLADA, 2020

24 INVITED LECTURE AT CHASCON-2020 (SECTION: CHEMICAL SCIENCES) PANJAB UNIVERSITY, CHANDIGARH.

25 INVITED LECTURE AT DR. R.C. PAUL MEMORIAL CONFERENCE, 2020 PANJAB UNIVERSITY, CHANDIGARH.

SUMMARY OF RESEARCH WORK DONE SO FAR

Research work leading to Ph.D was carried by me at the Punjabi University, Patiala, Punjab, India with Prof. A.L.J. Rao. During this work we developed different spectrophotometric methods for the determination of several metal ions and pesticides via complexation with suitable organic reagents for the colour development. Polarographic studies of the pesticides and metal ions were also carried out and these were applied for their analysis in several commercial samples, synthetic mixtures and residue analysis**.**

I have also worked as PDF, sponsored by the AvH, foundation, Bonn, Germany, with group leader Dr W. Faubel in the IFIA, Forschungszentrum, Karlsruhe, Postfach 3640, D-76021, Karlsruhe, Germany. There I worked for the analysis of toxic metal ions and pesticides using capillary electrophoresis in water and various environmental samples and for the further improvements in the detector system using thermal lensing.	CE-Thermal lensing sensor 
I was invited as a Scientist by the MEC, Spain to work with Prof. Carmen –Camara for the development of the new methods for the sample introduction in ICP-MS. There I worked for the analysis of the As in various environmental samples and for the interference removal of chloride in the determination of As using ICP-MS.	 Schematic of on-line Capillary electrophoresis-ICP-MS
I was also reinvited by the AvH, Bonn, Germany to do further research work in Germany at the Forschungszentrum Juelich, Juelich and during this work I developed CE-ID-ICP-MS hyphenation for the analysis of the lanthanides and actinides in various environmental samples under the supervision of Prof. J.S. Becker.	 CE-hyphenated to ICP-MS

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Major Research Activities

1 *Spectrophotometric dertermination of toxic metal ions and pesticides*
2 *Polarographic determination toxic metal ions and pesticides*
3 *Capillary electrophoretic dertermination of toxic metal ions, pesticides and pharmaceuticals.*
4 *ICP-MS for the analysis of metal ions, pesticides, etc and modifications in the sample introduction systems.*
5 *Solid phase micro-extraction of organic compounds in different environmental samples and their analysis by HPLC-UV, GC-MS, etc*

Major instruments Handled/Training/softwares

1 *Polarograph*
2 *FTIR (Varian)*
3 *Spectrophotometer (Vairan, Bausch and Lomb, Elico, Schimadzu)*
4 *Capillary electrophoresis (Termo Quest, Beckman Coulter P/ACE MDQ Carbohydrate system, Agilent)*
5 *Capillary electrophoresis in hyphenation with termal lensing*
6 *Capillary electrophoresis in hyphenation with ICP-MS*
7 *HPLC (Waters, Dionex USA)*
8 *Spectrofluorimeter (Schimadzu)*
9 *ICP-MS (HP,Elan , Element (Bruckers))*
10 *Solid phase microextraction (SPME) and SPE (Suppelco)*
11 *FTICR-MS (12 Tesla Bruckers)*

REFERENCES

Prof. Ph. Schmitt -Kopplin
Department of Ecological Chemistry
GSF, Research Centre,
Munich, Germany
e-mail:schmitt-kopplin@gsf.de

Prof. A. L. J. Rao,
Retd. Emeritus
Department of Chemistry
Pbi. Univ., Patiala, Punjab,
e-mail:aljrao@rediffmail.com

BEST POSTER AWARDS:

1 'A new approach to the analysis of toxic metal ions by using SPME-HPLC-UV system"Varinder Kaur, **Ashok Kumar Malik**, Raghubir Singh and J. K. Puri

Professor Ram Chand Paul 4th National Annual Symposium on Recent Trends in Chemistry, P. U. Chandigarh, 2008.

2 "Rapid analysis of nitro explosives using solid phase microextraction high performance liquid chromatography on reverse phase amide column with UV detection and application to aqueous samples" **Gaurav, Ashok Kumar Malik**, P.K.Rai at National Seminar on Recent Trends in Chemistry at Punjabi University, Patiala, ***Jan 21-22, 2009***

3 Analysis of linear alkylbenzenesulfonates in water and sediment samples by CE-UV and CE–MS. **Ashok Kumar Malik**, P. Vazquez-Roig and Yolanda Picó
Professor Ram Chand Paul 7th National Annual Symposium on Recent Trends in Chemistry, P. U. Chandigarh, 2010.

4 MEPS-GC-MS determination of Endosulfan isomers and its metabolites in tap water and technical sample at National Conference on Innovative Molecules for Sustainable Future organized by School of Chemistry and Biochemistry, Thapar University, Patiala on October 24-26, 2013. Raman

FOREIGN SCIENTISTS VISIT TO MY LAB

1 Prof. Ph. Schmitt -Kopplin
Department of Ecological Chemistry
GSF, Research Centre,
Munich, Germany

2 Dr. Moritz Frommeberger
Department of Ecological Chemistry
GSF, Research Centre,
Munich, Germany ,

3 Prof. F.M. Matysik
Regensburg University,
Regensburg, Germany

4 Dr. Marco Grundmann
Regensburg University,
Regensburg, Germany

5 Dr. Mourad Harir
Department of Ecological Chemistry
GSF, Research Centre,
Munich, Germany

6 Prof. Ian D. Brindle B.Sc., M.Sc., D.Sc., FRSC(UK)
Chancellor's Chair for Research Excellence
Professor of Chemistry
Dean, Faculty of Mathematics and Science
Brock University

500 Glenridge Avenue
St. Catharines, Ontario, Canada L2S 3A1

LIST OF CONFERENCES ORGANISED

I have played an active role during the organisation of the :

1 the National Seminar held at the Department of Chemistry, Punjabi University, Patiala (Feb. 15-16, 2011)

2 the National Seminar held at the Department of Chemistry, Punjabi University, Patiala (Feb. 15-16, 2012)

3 the National Seminar held at the Department of Chemistry, Punjabi University, Patiala (Feb. 15-16, 2013)

4 National Seminar held at the Department of Chemistry, Punjabi University, Patiala (Feb., 2014)

5 7^{th} National Seminar held at the Department of Chemistry, Punjabi University, Patiala (Feb. 19-20, 2015)

6 8^{th} National Seminar held at the Department of Chemistry, Punjabi University, Patiala during Feb. 04-05, 2016.

7 9^{th} National Seminar held at the Department of Chemistry, Punjabi University, Patiala during Feb. 09-10, 2017.

8 10^{th} National Confrence held at the Department of Chemistry, Punjabi University, Patiala during Feb. 15-16, 2018.

9 11^{th} National Confrence held at the Department of Chemistry, Punjabi University, Patiala during Feb. 07-08, 2019.

10 12^{th} National Confrence held at the Department of Chemistry, Punjabi University, Patiala during Feb. 19-20, 2020.

392 LIST OF PUBLICATIONS (2022-1991)

Sr. No.	Title	Authors	Journal name	Page Number	Year	Volume	Issue/ number	Author type	Impact factor	ISSN No.
228	Porphyrin metal-organic framework sensors for chemical and biological sensing	Malik Ashok Kumar, Rupy Dhir, Kaur, M.,	Environmental Science and Pollution Research		2023			Corresponding	5.19	
227	Synthesis, Characterization, Analytical Application, and Theoretical Studies of a Schiff Base, (E)-2-(2-aminophenylthio)-N-(Thiophen-2-yl-methylene) Benzenamine	Asnake Lealem Berhanu, Irshad Mohiuddin, Ashok Kumar Malik, Jatinder Singh Aulakh	Journal of fluorescence				DOI 10.1007/s10895-023-03435-5	Corresponding	2.217	1053-0509
226	Development of a novel green catalyzed nanostructured Cu (II) macrocyclic complex-based disposable electrochemical sensor for sensitive detection of bisphenol A	M Patyal, D Verma, N Gupta, AK Malik	Environmental Pollution	122420	2023	336	https://doi.org/10.1016/j.envpol.2023.122420	Co-author	8.9	0269-7491
225	Magnetic graphene oxide carbon dot nanocomposites as an efficient quantification tool against parabens in water and cosmetic samples	Malik Ashok Kumar, Jatinder Singh Aulakh, Sandeep Kumar	Environmental Science and Pollution Research		2023			Co-author	5.19	1614-7499
224	Terbium-Based Dual-Ligand Metal Organic Framework by Diffusion Method for Selective and Sensitive Detection of Danofloxacin in	G Singh, D Garg, S Kumar, R Verma, AK Malik	Environmental Science and Pollution Research		2023			Corresponding	5.19	1614-7499

	Aqueous Medium									
223	Highly selective and sensitive detection of Cu2+ ions using TGA capped Ce (III)-doped ZnS nanoparticles as fluorescent probe	S Maheshwari, K Kaur, AK Malik, M Kaur			2023					
222	Rhodanine-3-acetic acid based meta and para phenyl substituted novel derivatives: Synthesis, structural characterization and DFT study	Varinder Singh, Neha Sharma, Ashok Kumar Malik , Sandeep Kaur	Journal of Molecular Structure	136459	2023	1294	2	Co-author	3.8	0022-2860
221	Pyrazoline-Based Fluorescent Probe: Synthesis, Characterization, Theoretical Simulation, and Detection of Picric Acid	P Sharma, M Yusuf, AK Malik	Journal of Fluorescence		2023			Corresponding - author	2.217	1053-0509
220	Amine-decorated Zirconium Based Metal Organic Framework for Ultrafast Detection of 2,4,6-Trinitrophenol in Aqueous Samples	Verma, R., Dhingra, G., Kaur, M., (...), Mohiuddin, I., Malik, A.K.	Journal of Fluorescence		2023			Corresponding - author	2.217	1053-0509
219	Restricted access medium magnetic molecularly imprinted polymers: Validation of their suitability as an effective quantitation tool against phthalates in food products packaged in plastic	Bhogal, S., Mohiuddin, I., Kim, K.-H., Malik, A.K., Kaur, K	Chemical Engineering Journal	141270	2023	457,		Co-author	16.744	1385-8947
218	Efficient Turn-On Zr Based Metal Organic Framework	Verma, R., Dhingra, G., Singh, G., (...), Dureja, N., Malik, A.K.	Journal of Fluorescence		2023			Corresponding - author	2.217	1053-0509

	Fluorescent Sensor for Ultrafast Detection of Danofloxacin in Milk Samples									
217	A Novel Composite of Zinc-based Metal Organic Framework Embedded with SnO2 Nanoparticle as a Photocatalyst for Methylene Blue Dye Degradation as well as Fluorometric Probe for Nitroaromatic Compounds Detection	Deepika, Heena, Kaur, M., Singh, K., Malik, A.K	Journal of Fluorescence	613-629	2023	33	(2)	Corresponding - author	2.217	1053-0509
216	Optical and Antimicrobial Activity of Nanostructured Mn(II) and Cu(II) Macrocyclic Complexes Derived from Aspartic Acid	Patyal, M., Kaur, K., Gupta, N., Kaur, R., Malik, A.K.	Protection of Metals and Physical Chemistry of Surfaces	169-178	2023	59	2	Co-author	1.2	2070-2051
215	Schiff base-functionalized metal-organic frameworks as an efficient adsorbent for the decontamination of heavy metal ions in water	Kaur, M., Kumar, S., Yusuf, M., (...), Ahmadi, Y., Kim, K.-H.	Environmental Research	116811	2023	236	2	Co-author	8.3	0013-9351
214	Innovative lanthanide complexes: Shaping the future of cancer/ tumor chemotherapy	Patyal, M., Kaur, K., Bala, N., Gupta, N., Malik, A.K.	Journal of Trace Elements in Medicine and Biology	127277	2023	80		Co-author	3.5	
213	Novel SnO2@Cu3(BTC)2 Composites as a Highly Efficient Photocatalyst and	Deepika Garg, Heena Rekhi, Harpreet Kaur, Karamjit Singh, Ashok Kumar Malik	Journal of Fluorescence				10.1007/s10895-023-03232-	Corresponding		1053-0509

	Fluorescent Sensor						0			
212	Nanoscale synthesis, structural elucidation, DFT, and biological activity of amide appended transition metal(II) macrocyclic complexes in drug delivery system	Meenakshi Patyala ,Kirandeep Kaur,Promila Sharma,Nidhi Gupta,Ashok Kumar Malik & Kamaldeep Paul	Journal of Coordination Chemistry	19-24	2022	75	https://doi.org/10.1080/00958972.2022.2151363	Co-author	3.0	0095-8972
211	Photocatalytic and Sensing Applications of Semiconductor Nanostructures	Seema Maheshwari, Shikha Bhogal, Kuldeep Kaur, and Ashok Kumar Malik	Current and Future Developments,	30-59	2022,			Corresponding	Book chapter	
210	A Luminescent Cu(II)-MOF with Lewis Basic Schiff Base Sites for the Highly Selective and Sensitive Detection of Fe^{3+} Ions and Nitrobenzene	Manpreet Kaur, Mohamad Yusuf and Ashok Kumar Malik	Journal of Fluorescence		2022		https://doi.org/10.1007/s10895-022-03053-7	Corresponding	2.217	1053-0509
209	Amine/hydrazone functionalized Cd(II)/Zn(II) metal-organic framework for ultrafast sensitive detection of hazardous 2,4,6-trinitrophenol in water	Manpreet Kaur, Mohamad Yusuf, Yiu Fai Tsang, Ki-Hyun Kim, Ashok Kumar Malik	Science of The Total Environment	159385	2022		https://doi.org/10.1016/j.scitotenv.2022.159385	Corresponding	10.753	0048-9697
208	Bisphenol A in canned soft drinks, plastic-bottled water, and household water tank from Punjab, India	Ashwini Kumar, Daljit Singh, Rajan Bhandari, Ashok Kumar Malik, Sukhjeet Kaur, Baljinder Singh	Journal of Hazardous Materials Advances	100205	2022	9	Available online 19 November 2022, 100205	Co-author	10.1016	2772-4166
207	Progress in Pre-Treatment and Extraction of Pollutants by Layered Double Hydroxide	Aman Grover, Irshad Mohiuddin, Ashok Kumar Malik, Jatinder Singh, Aulakh Lee. J.C., Richard J.C. Brown, Ki-Hyun Kim	Environmental Research	-	2022	-	-	Corresponding	8.431	0013-9351

206	Mesoporous Silica Imprinted Carbon Dots for the Selective Fluorescent Detection of Triclosan	Bhogal, Shikha; Mohiuddin, Irshad; Malik, Ashok Kumar; Brown, Kuldeep Gill, Richard J.C. , Heynderickx, Philippe M., Kim, Ki-Hyun	Science of The Total Environment	157289	2022	-	-	Corresponding	10.753	0048-9697
205	Self-Polymerized Polydopamine-Imprinted Layer-Coated Carbon Dots as a Fluorescent Sensor for Selective and Sensitive Detection of 17β-Oestradiol	Bhogal, Shikha; Mohiuddin, Irshad; Malik, Sandeep kumar Ashok Kumar; Brown, Kuldeep Gill, Kim, Ki-Hyun	Science of The Total Environment	-	2022	-	-	Corresponding	10.753	0048-9697
204	Novel Electrochemical Synthesis and Characterization of Zn(II) Metal Organic Framework for Photo-catalytic and Sensing Applications	Deepika Garg, Heena Rekhi, Harpreet Kaur, Karamjit Singh, Ashok Kumar Malik	Journal of Fluorescence	1565–1580	2022	32	-	Corresponding	2.217	1053-0509
203	Identification of Missense SNPs mediated mutations in the regulatory sites of aldose reductase (ALR2)responsible for treatment failure in diabetic complications	Bhawna Vyas, Shalki Choudhary; Himanshu Verma; Manoj Kumar; Ashok Kumar Malik	Journal of Molecular Graphics and Modelling	-	2022	-	-	Corresponding	2.518	1093-3263
202	Nanostructure Impregnated MOFs for Photo-catalytic and Sensing Applications	Aman Grover, Irshad Mohiuddin, Shikha Bhogal, Ashok Kumar Malik, Jatinder Singh, Aulakh Lee.	Bentham Science Publishers	-	2022	-	-	Corresponding	N/A	N/A
201	Metal-Organic Frameworks: Synthesis, Characterization and Applications	Shikha Bhogal, Irshad Mohiuddin, Aman Grover, Ashok Kumar Malik, Jatinder Singh, Aulakh Lee.	Bentham Science Publishers	-	2022	-	-	Corresponding	N/A	N/A
200	Fluorescence “Turn-Off” Sensing of Iron (III) Ions Utilizing Pyrazoline Based Sensor: Experimental	Promila Sharma, Shikha Bhogal, Irshad Mohiuddin, Mohamad Yusuf, Ashok Kumar Malik	Journal of Fluorescence	-	2022	-	-	Corresponding	2.217	1053-0509

	and Computational Study									
199	A Luminescent Zinc-based azine-functionalized metal-organic framework for fluorescence detection of Fe^{3+} ions in the aqueous medium	Manpreet Kaur , Ashok Kumar Malik, Mohamad Yusuf,	Journal of Fluorescence	-	2022	-	-	Corresponding	2.217	1053-0509
198	Synthesis and Applications of MOFsChalcogenide-based Nanocomposites	Shikha Bhogal, Irshad Mohiuddin, Sandeep Kumar, Promila Sharma, Asnake Lealem Berhanu, Kuldeep Kaur, Ashok Kumar Malik	Taylor and Francis Group	-	2022	N/A	N/A	Corresponding	N/A	9781003188148
197	Mobil catalytic material number 41 modified magnetite nano-composites for efficient extraction of non-steroidal anti-inflammatory drugs from tap water and urine samples	Sandeep Kumar Shikha Bhogal Promila Sharma Susheela Rani, Jatinder Singh Aulakh Ashok Kumar Malik	Sep Sci plus	-	2022	-	-	Corresponding	N/A	2573-1815
196	Experimental and Theoretical Studies of the Pyrazoline Derivative 5-(4-methylphenyl)-3-(5-methylfuran-2-yl)-1-phenyl-4,5-dihydro-1H-Pyrazole and its Application for Selective Detection of Cd2+ ion as Fluorescent Sensor	Sharma P., Bhogal S., Lealam A., Kumar S., Yusuf M., Malik A.K.	Journal of Fluorescence	969-981	2022	32	3	Corresponding	2.217	1053-0509
195	A Novel Method for the Synthesis of MOF-199 for Sensing and Photocatalytic Applications	Garg D., Rekhi H., Kaur H., Singh K., Malik A.K.	Journal of Fluorescence	1171-1188	2022	32	3	Corresponding	2.217	1053-0509
194	Bis(thiophen-2-yl-methylene) Benzene-1, 4-Diamine as	Berhanu A.L., Bhogal S., Mohiuddin I., Grover A., Malik A.K., Aulakh J.S.	Journal of Fluorescence	1247-1259	2022	32	3	Corresponding	2.217	1053-0509

	Fluorescent Probe for the Detection of Fe3+ in Aqueous Samples									
193	Magnesium/aluminum layered double hydroxides intercalated with starch for effective adsorptive removal of anionic dyes	Grover A., Mohiuddin I., Malik A.K., Aulakh J.S., Vikrant K., Kim K.-H., Brown R.J.C.	Journal of Hazardous Materials	127454	2022	424	-	Co-author	14.224	0304-3894
192	Synchronous Fluorescence Determination of Al3+ Using 3-Hydroxy-2-(4-Methoxy Phenyl)-4H-Chromen-4-One as a Fluorescent Probe	Bhogal S., Sharma P., Rani P., Kaur K., Malik A.K.	Journal of Fluoresce-nce	359-367	2022	32	1	Corresponding	2.217	1053-0509
191	Post-synthetic modification of luminescent metal-organic frameworks using schiff base complexes for biological and chemical sensing	Kaur M., Kumar S., Yusuf M., Lee J., Brown R.J.C., Kim K.-H., Malik A.K.	Coordination Chemistry Reviews	214214	2021	449	-	Corresponding	**24.833**	0010-8545
190	Simultaneous determination of amitriptyline, nortriptyline, and clomipramine in aqueous samples using selective multi-template molecularly imprinted polymers	Mohiuddin I., Bhogal S., Grover A., Malik A.K., Aulakh J.S.	Environmental Nanotechnology, Monitoring and Management	100527	2021	16	-	Corresponding	-	2215-1532
189	Post-Synthesis modification of metal-organic frameworks using Schiff base complexes for various catalytic applications	Kaur M., Kumar S., Younis S.A., Yusuf M., Lee J., Weon S., Kim K.-H., Malik A.K.	Chemical Engineering Journal	130230	2021	423	-	Corresponding	16.744	1385-8947
188	Hollow porous molecularly imprinted	Bhogal S., Kaur K., Mohiuddin I., Kumar S., Lee J., Brown R.J.C.,	Environmental	117775	2021	288	-	Co-author	9.988	0269-7491

	polymers as emerging adsorbents	Kim K.-H., Malik A.K.	Pollution							
187	Synthesis of Copper Metal Organic Framework Based on Schiff Base Tricarboxylate Ligand for Highly Selective and Sensitive Detection of 2,4,6-Trinitrophenol in Aqueous Medium	Kaur M., Yusuf M., Malik A.K.	Journal of Fluorescence	1959-1973	2021	31	6	Corresponding	2.217	1053-0509
186	Dual-template magnetic molecularly imprinted polymer-based sorbent for simultaneous and selective detection of phenolic endocrine disrupting compounds in foodstuffs	Bhogal S., Mohiuddin I., Kaur K., Lee J., Brown R.J.C., Malik A.K., Kim K.-H.	Environmental Pollution	116613	2021	275	-	Co-author	9.988	0269-7491
185	Selective lithiation of 2,4-lutidine: Role of transition states of lithium dialkylamides	Sharma N., Dhau J.S., Singh A., Abbat S., Bharatam P.V., Malik A.K., Singh A.	Journal of Organometallic Chemistry	121691	2021	936	-	Co-author	2.345	0022-328X
184	Chitosan-Ni/Fe layered double hydroxide composites as an efficient solid phase extraction sorbent for HPLC-PDA monitoring of parabens in personal care products	Grover A., Mohiuddin I., Malik A.K., Aulakh J.S., Kukkar D., Kim K.-H.	Chemosphere	128429	2021	264	-	Co-author	8.943	0045-6535
183	Starch-Mg/Al layered double hydroxide composites as an efficient solid phase extraction sorbent for non-steroidal anti-inflammatory drugs as environmental	Mohiuddin I., Grover A., Aulakh J.S., Malik A.K., Lee S.S., Brown R.J.C., Kim K.-H.	Journal of Hazardous Materials	123782	2021	401	-	Co-author	14.224	0304-3894

	pollutants									
182	A Comprehensive Review on Metal Organic Framework Based Preconcentration Strategies for Chromatographic Analysis of Organic Pollutants	Verma R., Dhingra G., Malik A.K.	Critical Reviews in Analytical Chemistry	1-27	2021	-	-	Corresponding	6.535	1547-6510
181	Core-shell structured molecularly imprinted materials for sensing applications	Bhogal S., Kaur K., Malik A.K., Sonne C., Lee S.S., Kim K.-H.	TrAC - Trends in Analytical Chemistry	116043	2020	133	-	Co-author	14.908	0165-9936
180	Trace determination of parabens in cosmetics and personal care products using fabric-phase sorptive extraction and high-performance liquid chromatography with UV detection	Kaur R., Heena, Kaur R., Grover A., Rani S., Malik A.K., Kabir A., Furton K.G.	Journal of Separation Science	2626-2635	2020	43	13	Corresponding	3.645	1615-9306
179	Mineralogy, chemistry, and composition of organic compounds in the fresh carbonaceous chondrite Mukundpura: CM1 or CM2?	Potin S., Beck P., Bonal L., Schmitt B., Garenne A., Moynier F., Agranier A., Schmitt-Kopplin P., Malik A.K., Quirico E.	Meteoritics and Planetary Science	1681-1696	2020	55	7	Co-author	2.487	1086-9379
178	Efficient Recognition and Determination of Carbamazepine and Oxcarbazepine in Aqueous and Biological Samples by Molecularly Imprinted Polymers	Irshad Mohiuddin, Malik A.K., Aulakh J.S.	Journal of Analytical Chemistry	717-725	2020	75	6	Co-author	1.237	0253-3820
177	Search for non-acidic ALR2 inhibitors: Evaluation of flavones as targeted agents for	Vyas B., Choudhary S., Singh P.K., Kumar M., Verma H., Singh M., Malik A.K., Silakari O.	Bioorganic Chemistry	103570	2020	96	-	Corresponding	5.307	0045-2068

	the management of diabetic complications									
176	Porous molecularly-imprinted polymer for detecting diclofenac in aqueous pharmaceutical compounds	Mohiuddin I., Grover A., Aulakh J.S., Lee S.-S., Malik A.K., Kim K.-H.	Chemical Engineering Journal	123002	2020	382	-	Co-author	16.744	1385-8947
175	Experimental and theoretical studies of the schiff base (Z)-1-(thiophen-2-yl-methyleneamino) propane-2-ol	Berhanu A.L., Sharma N., Mohiuddin I., Malik A.K., Aulakh J.S., Lee J., Kim K.-H.	Journal of Molecular Structure	127104	2020	1200	-	Co-author	3.841	0022-2860
174	Zn-Al layered double hydroxides intercalated with surfactant: Synthesis and applications for efficient removal of organic dyes	Grover A., Mohiuddin I., Malik A.K., Aulakh J.S., Kim K.-H.	Journal of Cleaner Production	118090	2019	240	-	Co-author	11.072	0959-6526
173	One-pot three-component synthesis of α-amino nitriles using ZnO as a heterogeneous, reusable, and eco-friendly catalyst	Kaur B., Chand S., Malik A.K., Dhaliwal K.S., Younis S.A., Kim K.-H.	Journal of Cleaner Production	329-339	2019	234	-	Corresponding	11.072	0959-6526
172	Surfactant-modified Zn/Al-layered double hydroxides for efficient extraction of alkyl phenols from aqueous samples	Grover A., Kaur R., Mohiuddin I., Malik A.K., Aulakh J.S., Tsang Y.F., Kim K.-H.	Environmental Research	108605	2019	177	-	Co-author	8.431	0013-9351
171	Advances in colorimetric and optical sensing for gaseous volatile organic compounds	Azzouz A., Kumar V., Kim K.-H., Ballesteros E., Rhadfi T., Malik A.K.	TrAC - Trends in Analytical Chemistry	502-516	2019	118	-	Co-author	14.908	0165-9936
170	Preparation and evaluation of a porous molecularly imprinted	Mohiuddin I., Berhanu A.L., Malik A.K., Aulakh J.S., Lee J., Kim K.-H.	Environmental Research	108580	2019	176	-	Co-author	8.431	0013-9351

	polymer for selective recognition of the antiepileptic drug carbamazepine									
169	A review of the applications of Schiff bases as optical chemical sensors	Berhanu A.L., Gaurav, Mohiuddin I., Malik A.K., Aulakh J.S., Kumar V., Kim K.-H.	TrAC - Trends in Analytical Chemistry	74-91	2019	116	-	Co-author	14.908	0165-9936
168	Fabric phase sorptive extraction/GC-MS method for rapid determination of broad polarity spectrum multi-class emerging pollutants in various aqueous samples	Kaur R., Kaur R., Grover A., Rani S., Malik A.K., Kabir A., Furton K.G.	Journal of Separation Science	2407-2417	2019	42	14	Corresponding	3.645	1615-9306
167	Determination of norfloxacin in urine and pharmaceutical samples using terbium doped zinc sulphide nanomaterials-sensitized fluorescence method	Kaur B., Kumar R., Chand S., Singh K., Malik A.K.	Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy	261-268	2019	214	-	Corresponding	4.831	1386-1425
166	Fabric phase sorptive extraction/GC-MS method for rapid determination of broad polarity spectrum multi-class emerging pollutants in various aqueous samples.	Ramandeep Kaur, Ripneel Kaur, Aman Grover, Susheela Rani, Ashok Kumar Malik, Abuzar Kabir, and Kenneth G. Furton.	Journal of separation science	2407-2417	2019	42	14	Corresponding	3.645	1615-9306
165	Fabrication of Zn (II) Selective Polyvinyl Chloride Membrane Electrode based on N, N'-bis (1-hydroxynaphthalene-2-carbaldehyde)-o-phenylenediamine as an Ionophore:	Karamjeet Kaur, Jatinder Singh Aulakh, and Ashok Kumar Malik.	Journal of Analytical Chemistry	134-142	2019	74	2	Co-author	1.237	0253-3820

	Experimental and Theoretical Approaches.									
164	Detoxification of dye contaminated water by Mn2+-doped ZnS nanostructures	Kaur B., Chand S., Singh K., Malik A.K.	Bulletin of Materials Science	42-61	2019	42	2	Corresponding	1.878	0250-4707
163	Application of fabric phase sorptive extraction with gas chromatography and mass spectrometry for the determination of organophosphorus pesticides in selected vegetable samples	Kaur R., Kaur R., Rani S., Malik A.K., Kabir A., Furton K.G.	Journal of Separation Science	862-870	2019	42	4	Corresponding	3.645	1615-9306
162	Fabrication of Zn(II) Selective Polyvinyl Chloride Membrane Electrode based on N,N'-bis(1-hydroxynaphthalene-2-carbaldehyde)-o-phenylenediamine as an Ionophore: Experimental and Theoretical Approaches	Karamjeet Kaur, Aulakh J.S., Malik A.K.	Journal of Analytical Chemistry	134-142	2019	74	2	Co-author	1.237	0253-3820
161	Surface Molecularly Imprinted Carbon Dots Based Core-Shell Material for Selective Fluorescence Sensing of Ketoprofen	Bhogal S., Kaur K., Maheshwari S., Malik A.K.	Journal of Fluorescence	145-154	2019	29	1	Corresponding	2.217	1053-0509
160	Rapid monitoring of organochlorine pesticide residues in various fruit juices and water samples using fabric phase sorptive extraction and gas chromatography-mass	Kaur R., Kaur R., Rani S., Malik A.K., Kabir A., Furton K.G., Samanidou V.F.	Molecules	1013	2019	24	6	Corresponding	4.927	N/A

	spectrometry									
159	Morphological and Photo-catalytic Behavior of Ce doped ZnS	Balwinder Kaur, Subhash Chand, Karamjit Singh , Ashok Kumar Malik	Nanomaterial research	-	2019	-	-	Corresponding	4.921	2079-4991
158	Identification of 2-benzoxazolinone derivatives as lead against molecular targets of diabetic complications	Vyas B., Choudhary S., Singh P.K., Singh B., Bahadur R., Malik A.K., Silakari O.	Chemical Biology and Drug Design	1981-1987	2018	92	6	Corresponding	2.817	1747-0277
157	Chemiluminescence	Rekhi H., Kaur R., Malik A.K.	Advances in Animal Biotechnology and its Applications	383-401	2018	-	-	Corresponding	N/A	N/A
156	Direct rapid determination of trace aluminum in various water samples with quercetin by reverse phase high-performance liquid chromatography based on fabric phase sorptive extraction technique	Rekhi H., Kaur R., Rani S., Malik A.K., Kabir A., Furton K.G.	Journal of Chromatographic Science	452-460	2018	56	5	Corresponding	1.555	0021-9665
155	Identification of 2-benzoxazolinone derivatives as lead against molecular targets of diabetic complications	Bhawna Vyas, Shalki Choudhary, Pankaj Kumar Singh, Baldev Singh, Renu Bahadur, Ashok Kumar Malik, and Om Silakari.	Chemical Biology & Drug Design	1981-1987	2018	92	6	Corresponding	2.817	1747-0277
154	Development of a microextraction by packed sorbent with gas chromatography-mass spectrometry method for quantification of	Dhingra G., Bansal P., Dhingra N., Rani S., Malik A.K.	Journal of Separation Science	639-647	2018	41	3	Corresponding	3.645	1615-9306

	nitroexplosives in aqueous and fluidic biological samples									
153	A Review on Recent Applications of High-Performance Liquid Chromatography in Metal Determination and Speciation Analysis	Rekhi H., Rani S., Sharma N., Malik A.K.	Critical Reviews in Analytical Chemistry	524-537	2017	47	6	Corresponding	3.645	1615-9306
152	Effect of ligands on crystallography, morphology and photo-catalytic ability of ZnS nanostructures	Kaur B., Singh K., Malik A.K.	Dyes and Pigments	153-160	2017	142	-	Corresponding	5.122	0143-7208
151	A study on effect of ligand on crystallography, morphology and photo-catalytic ability of ZnS nanostructures	Balwinder Kaur, Karamjit Singh, Ashok Kumar Malik	Research Journal of Recent Sciences	13-19	2017	6	6	Corresponding	0.675	2277 - 2502
150	A novel protocol to monitor trace levels of selected polycyclic aromatic hydrocarbons in environmental water using fabric phase sorptive extraction followed by high performance liquid chromatography-fluorescence detection	Saini, S.S., Kabir, A., Rao, A.L.J., Malik, A.K. and Furton, K.G.	Separations	22	2017	4	2	Corresponding	N/A	22978739
149	Flavonoids biosynthesis in plants and its further analysis by capillary electrophoresis	Singh B., Kumar A., Malik A.K.	Electrophoresis	820-832	2017	38	6	Corresponding	3.535	0173-0835
148	Precursor dependent morphological and photo-catalytic behaviour of CdS nanostructures	Kaur B., Singh K., Malik A.K.	Dyes and Pigments	352-359	2017	137		Corresponding	5.122	0143-7208

147	Determination of cobalt(II), nickel(II) and palladium(II) Ions via fabric phase sorptive extraction in combination with high-performance liquid chromatography-UV detection	Heena, Kaur R., Rani S., Malik A.K., Kabir A., Furton K.G.	Separation Science and Technology (Philadelphia)	81-90	2017	52	1	Corresponding	2.799	0149-6395
146	FT-IR, NMR, molecular structure, and HOMO-LUMO studies of 3,5-dimethyl-2-pyridylselenium compounds by density functional theory	Sharma N., Dhau J.S., Singh A., Singh A., Malik A.K.	Phosphorus, Sulfur and Silicon and the Related Elements	368-375	2017	192	3	Corresponding	1.082	N/A
145	A Review for the Analysis of Antidepressant, Antiepileptic and Quinolone Type Drugs in Pharmaceuticals and Environmental Samples	Rani S., Malik A.K., Kaur R., Kaur R.	Critical Reviews in Analytical Chemistry	424-442	2016	46	5	Corresponding	3.645	1615-9306
144	Simple and rapid determination of phthalates using microextraction by packed sorbent and gas chromatography with mass spectrometry quantification in cold drink and cosmetic samples	Kaur R., Heena, Kaur R., Rani S., Malik A.K.	Journal of Separation Science	923-931	2016	39	5	Corresponding	3.645	1615-9306
143	Capillary electrophoretic analysis of classical organic pollutants	Malik A.K., Aulakh J.S., Kaur V.	Methods in Molecular Biology	407-435	2016	1483	-	Corresponding	1.167	1940-6029
142	Importance and various challenges of	Heena, Irshad Mohiuddin, Ashok Kumar Malik	International journal	58-62	2016	4	6	Corresponding	1.5	2278-2540

	trace metal speciation in environment system		of engineering, technology, management and applied sciences							
141	Simple and rapid determination of Phthalates using microextraction by packed sorbent and GCMS quantification in cold drink and cosmetic samples	Ramandeep Kaur, Heena, Ripneel Kaur, Susheela Rani and Ashok Kumar Malik	Journal of Separation Science	923–931	2016	39	5	Corresponding	3.645	1615-9306
140	FT-IR, NMR, Molecular structure and HOMO-LUMO Studies of 3,5-Dimethyl-2-pyridylselenium Compounds by Density Functional Theory	Neha Sharma, Jaspreet S. Dhau, Avtar Singh, Amritpal Singh & Ashok Kumar Malik	Phosphorus, Sulfur, And Silicon And The Related Elements	368-375	2016	192	3	Co-author	1.082	N/A
139	Metal ions analysis with capillary zone electrophoresis	Malik A.K., Aulakh J.S., Kaur V.	Methods in Molecular Biology	217-247	2016	1483	-	Corresponding	1.167	1940-6029
138	Analysis of small ions with capillary electrophoresis	Aulakh J.S., Kaur R., Malik A.K.	Methods in Molecular Biology	197-216	2016	1483	-	Corresponding	1.167	1940-6029
137	Antidepressants: A rising tide of concern	Mohiuddin I., Kaur R., Rekhi H., Aulakh J.S., Malik A.K.	Antidepressants: Perspectives, Medical Uses and Health Implicatio	-	2016	1	27	Co-author	N/A	N/A

			ns							
136	Spectroscopy: Types	Malik A.K., Kumar R., Heena	Encyclopedia of Food and Health	72	2015	64	-	Corresponding	N/A	N/A
135	Development of a very rapid and sensitive method for the determination of Aluminium as Aluminium 8-Hydroxyquinoline-5-sulfonic acid complex by High Pressure Liquid Chromatography	Heena, Rajesh Kumar and Ashok Kumar Malik	Journal of Chromatographic Science	800-806	2015	53	5	Corresponding	1.555	0021-9665
134	A miniaturised analytical protocol for highly sensitive determination of bisphenol A in bottled drinking water	Saini S.S., Rao A.L.J., Singh B., Malik A.K.	Analytical Methods	9365-9372	2015	7	21	Corresponding	3.532	1759-9660
133	Development of fabric phase sorptive extraction-high performance liquid chromatography-ultravoilet method for analysis of alkylphenols and application to aqueous and soil samples	Rajesh Kumar, Gaurav, Abuzar Kabir, Kenneth G. Furton, Ashok Kumar Malik	Journal of Separation Science	3228-3238	2015	38	18	Corresponding	3.645	1615-9306
132	Development of a fabric phase sorptive extraction with high-performance liquid chromatography and ultraviolet detection method for the analysis of alkyl phenols in environmental samples	Kumar R., Gaurav, Kabir A., Furton K.G., Malik A.K.	Journal of Separation Science	3228-3238	2015	38	18	Corresponding	3.645	1615-9306

131	Development of a rapid and sensitive method for the determination of aluminum by reverse-phase high-performance liquid chromatography using a fluorescence detector	Heena, Kumar R., Rani S., Malik A.K.	Journal of Chromatographic Science	800-806	2015	53	5	Corresponding	1.555	0021-9665
130	GC/MS analysis of volatile compounds of the essential oil of leaves of Ocimum sanctum growing in Hisar, India	Suthar S.K., Malik A.K.	Asian Journal of Chemistry	3135-3136	2015	27	8	Corresponding	0.49	9707077
129	Microextraction by packed sorbent-high-pressure liquid chromatographic-ultra violet analysis of endocrine disruptor pesticides in various matrices	Kaur M., Rani S., Malik A.K., Aulakh J.S.	Journal of Chromatographic Science	977-984	2014	52	9	Corresponding	1.555	0021-9665
128	Efficient analysis of selected estrogens using fabric phase sorptive extraction and high performance liquid chromatography-fluorescence detection	Kumar R., Gaurav, Heena, Malik A.K., Kabir A., Furton K.G.	Journal of Chromatography A	16-25	2014	1359	-	Corresponding	4.601	0021-9673
127	Recent progress, challenges and prospects in monitoring plastic-derived xenoestrogens using molecularly imprinted sorbents	Narula P., Singh R., Kaur V., Malik A.K.	Chromatographia	207-221	2014	77	3-4	Corresponding	2.213	0009-5893
126	Recent Advances in Sample Preparation Methods for Analysis of Endocrine	Singh B., Kumar A., Malik A.K.	Critical Reviews in Analytical	255-269	2014	44	3	Corresponding	3.645	1615-9306

	Disruptors from Various Matrices		Chemistry							
125	Determination of endosulfan isomers and their metabolites in tap water and commercial samples using microextraction by packed sorbent and GC-MS	Kaur R., Rani S., Malik A.K., Aulakh J.S.	Journal of Separation Science	966-973	2014	37	8	Corresponding	3.645	1615-9306
124	Study on the fluorescence quenching reaction of amitriptyline and clomipramine hydrochlorides with eosin y and its analytical application	Kaur K., Malik A.K.	Journal of Fluorescence	533-542	2013	23	3	Corresponding	2.217	1053-0509
123	Development of a fast capillary electrophoresis-time-of-flight mass spectrometry method for the speciation of organotin compounds under separation conditions of high electrical field strengths	Malik A.K., Grundmann M., Matysik F.-M.	Talanta	559-562	2013	116	3	Corresponding	6.556	0039-9140
122	Metal Speciation	Malik A.K., Kaur V., Kumar S.	Chemical Analysis of Food: Techniques and Applications	755	2012	715	-	Corresponding	N/A	N/A
121	A novel microextraction by packed sorbent-gas chromatography procedure for the simultaneous analysis	Rani S., Malik A.K.	Journal of Separation Science	2970	2012	35	21	Corresponding	3.645	1615-9306

	of antiepileptic drugs in human plasma and urine									
120	Micelle enhanced and terbium sensitized spectrofluorimetric determination of danofloxacin in milk using molecularly imprinted solid phase extraction	Kaur K., Saini S.S., Malik A.K., Singh B.	Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy	790-795	2012	96	-	Corresponding	4.831	1386-1425
119	Highly sensitive synchronous fluorescence measurement of danofloxacin in pharmaceutical and milk samples using aluminium (III) enhanced fluorescence	Kaur K., Saini S., Singh B., Malik A.K.	Journal of Fluorescence	1407-1413	2012	22	5	Corresponding	2.217	1053-0509
118	Liquid chromatographic determination of 1,3,5-trinitroperhydro-1,3,5-triazine and 2,4,6-trinitrotoluene in human plasma and groundwater samples utilizing microextraction in packed syringe	Bansal P., Gaurav G., Nidhi N., Malik A.K., Matysik F.-M.	Chromatographia	739-745	2012	75	13-14	Corresponding	2.213	0009-5893
117	Simultaneous spectrophotometric determination of difloxacin and enrofloxacin in urine samples by partial least squares regression (PLS) and direct orthogonal signal correction-	Kaur K., Malik A.K., Singh B., Godarzi M.	Thai Journal of Pharmaceutical Sciences	43-54	2012	36	2	Corresponding	0.619	1905-4637

	partial least squares regression (DOSC-PLS) methods									
116	Antidepressants: Pharmacology, health effects and controversy	Preetpal, Rani S., Malik A.K., Aulakh J.S.	Nova Science Publishers Inc; UK ed. edition	76	2012	49	-	Corresponding	N/A	N/A
115	Novel micro-extraction by packed sorbent procedure for the liquid chromatographic analysis of antiepileptic drugs in human plasma and urine	Rani S., Malik A.K., Singh B.	Journal of Separation Science	359	2012	35	3	Corresponding	3.645	1615-9306
114	Preconcentration method on modified silica fiber for chromium speciation	Chahal V.K., Singh R., Malik A.K., Matysik F.-M., Puri J.K.	Journal of Chromatographic Science	26-32	2012	50	1	Corresponding	1.555	0021-9665
113	Liquid chromatographic determination of quinolones in water and human urine samples after microextraction by packed sorbent	Rani S., Kumar A., Malik A.K., Singh B.	Journal of AOAC International	261-267	2012	95	1	Corresponding	2.028	1060-3271
112	Determination of phenylurea herbicides in tap water and soft drink samples by HPLC-UV and solid-phase extraction	Kaur M., Malik A.K., Singh B.	LC GC Europe	338–347	2012	29	4	Corresponding	0.914	1471-6577
111	Quantification of tricyclic and nontricyclic antidepressants in spiked plasma and urine samples using	Rani S., Kumar A., Malik A.K., Singh B.	Chromatographia	235-242	2011	74	3	Corresponding	2.213	0009-5893

	microextraction in packed syringe and analysis by LC and GC-MS									
110	Occurrence of N-Acyl Homoserine Lactones in Extracts of Bacterial Strain of Pseudomonas aeruginosa and in Sputum Sample Evaluated by Gas Chromatography–Mass Spectrometry	Susheela Rani, Ashok Kumar Malik, Baldev Singh	American Journal of Analytical Chemistry	294-302	2011	2	2	Corresponding	0.89	2156-8278
109	Chemiluminescence and spectrofluorimetric methods for determination of fluoroquinolones: A review	Kaur K., Singh B., Malik A.K.	Analytical Letters	1602-1639	2011	44	9	Corresponding	2.267	0003-2719
108	Microextraction in Packed Syringes/GC-MS/HPLC-UV for quantification of tricyclic and nontricyclic antidepressants in blood, urine and water samples	Susheela Rani, Ashwini Kumar, Ashok Kumar Malik, Baldev Singh	Chromato graphia	235-242	2011	73	4	Corresponding	2.213	0009-5893
107	Novel Micro–Extraction by Packed Sorbent Procedure for the Liquid Chromatographic Analysis of Antiepileptic Drugs in Human Plasma and Urine	Susheela Rani, Ashok Kumar Malik, Baldev Singh	Journal of Separation Science	359–366	2011	35	3	Corresponding	3.645	1615-9306
106	Determination of hydrazines by chip electrophoresis with contactless	Kumar A., Burns J., Hoffmann W., Demattio H., Malik A.K., Matysik F.-M.	Electroph oresis	920-925	2011	32	8	Co-author	3.535	0173-0835

	conductivity detection									
105	Combination of headspace single-drop microextraction, microchip electrophoresis and contactless conductivity detection for the determination of aliphatic amines in the biodegradation process of seafood samples	Mark J.J.P., Kumar A., Demattio H., Hoffmann W., Malik A., Matysik F.-M.	Electroanalysis	161-168	2011	23	1	Corresponding	3.077	1040-0397
104	Determination of phenylurea herbicides in tap water and soft drink samples by HPLC-UV and solid-phase extraction	Kaur M., Malik A.K., Singh B.	LCGC North America	338–347	2011	29	4	Corresponding	0.344	15275949
103	Synthesis, characterization and structural aspects of 3-azidopropylsilatrane	Singh R., Puri J.K., Pal Sharma R., Kumar Malik A., Ferretti V.	Journal of Molecular Structure	107-112	2010	982	1-3	Corresponding	3.841	0022-2860
102	Capillary electrophoresis-Mass spectrophotometry, UV/Visisble for the determination of pesticides.	Ashok Kumar Malik , Ashwini Kumar and Yolanda Picó	Electrophoresis	2115-2125	2010	31	13	Corresponding	3.535	0173-0835
101	Speciation of Cr(III) and Cr(VI) as morpholine-4-carbodithioate complex by using HPLC-PDA system after preconcentration on modified silica fiber	Varinder Kaur Chahal, Raghubir Singh, Ashok Kumar Malik, F.-M. Matysik and J. K. Puri	Journal of Chromatographic Science	26–32	2010	50	1	Corresponding	1.555	0021-9665
100	Sample preparation methods for the determination of pesticides in foods	Kumar A., Malik A.K., Picó Y.	Electrophoresis	2115-2125	2010	31	13	Corresponding	3.535	0173-0835

	using CE-UV/MS									
99	Liquid chromatography-mass spectrometry in food safety	Malik A.K., Blasco C., Picó Y.	Journal of Chromatography A	4018-4040	2010	1217	25	Corresponding	4.601	0021-9673
98	Simultaneous determination of Cu(II) and Pd(II) as 4-phenylpiperazinecarbodithioate complex using H-point standard addition method and derivative spectrophotometry	Kaur V., Malik A.K., Verma N.	Turkish Journal of Chemistry	295-305	2010	34	2	Co-author	1.151	1300-0527
97	Liquid Chromatography – mass spectrometry in Food safety – A review	Ashok Kumar Malik, Cristina Blasco, Yolanda Picó	Journal of Chromatohraphy A	4018-4040	2010	1217	25	Co-author	4.601	0021-9673
96	Amines in the environment	Fekete A., Malik A.K., Kumar A., Schmitt-Kopplin P.	Critical Reviews in Analytical Chemistry	102-121	2010	40	2	Co-author	3.645	1615-9306
95	Micelle enhanced spectrofluorimetric method for the determination of ofloxacin and lomefloxacin in human urine and serum	Kaur K., Singh B., Malik A.K.	Thai Journal of Pharmaceutical Sciences	58-66	2010	34	2	Corresponding	0.619	1905-4637
94	Development of a new SPME-HPLC-UV method for the analysis of nitro explosives on reverse phase amide column and application to analysis of aqueous samples	Gaurav, Malik A.K., Rai P.K.	Journal of Hazardous Materials	1652-1658	2009	172	2-3	Corresponding	14.224	0304-3894
93	Simultaneous spectrophotometric determination of	Kaur K., Malik A.K., Singh B., Godarzi M.	Thai Journal of Pharmace	123-136	2009	33	4	Corresponding	0.619	1905-4637

	carbidopa and levodopa by partial least squares regression, principal component regression and least squares support vector machine methods		utical Sciences							
92	Single drop microextraction of homoserine lactones based quorum sensing signal molecules, and the separation of their enantiomers using gas chromatography mass spectrometry in the presence of biological matrices	Malik A.K., Fekete A., Gebefuegi I., Rothballer M., Schmitt-Kopplin P.	Microchi mica Acta	101-107	2009	166	1	Co-author	6.408	0026-3672
91	A review on the Analysis of amines in the environment	Agnes Fekete, Ashok Kumar Malik and Philippe Schmitt-Kopplin	Critical Reviews in Analytical Chemistry	102-121	2009	40	2	Co-author	3.645	1615-9306
90	A review on hyphenation of solid phase microextraction with capillary electrophoresis and mass spectrometry	Ashwini Kumar, and Ashok Kumar Malik	Critical Reviews in Analytical Chemistry	81–88	2009	39	02-Jan	Corresponding	3.645	1615-9306
89	A review on the hyphenation of solid phase microextraction with capillary electrophoresis and mass spectrometry	Kumar A., Malik A.K.	Critical Reviews in Analytical Chemistry	81-88	2009	39	2	Corresponding	3.645	1615-9306
88	Extraction of Azadirachtin from Neem tree parts and its determination in fruit, vegetable and tea samples using Solid	Manpreet Kaur, Ashwini Kumar, Ashok Kumar Malik and Baldev Singh.	Separation Science	25-35	2009	1	N/A	Corresponding	N/A	N/A

	phase extraction-High Performance Liquid Chromatography-Ultra violet Visible									
87	A new method for determination of myricetin and quercetin using solid phase microextraction-high performance liquid chromatography-ultra violet/visible system in grapes, vegetables and red wine samples	Kumar A., Malik A.K., Tewary D.K.	Analytica Chimica Acta	177-181	2009	631	2	Corresponding	6.911	0003-2670
86	Speciation of chromium metal ions by RP-HPLC	Kaur V., Malik A.K.	Journal of Chromato graphic Science	238-242	2009	47	3	Corresponding	1.555	0021-9665
85	A new method for the determination myricetin and quercetin using solid phase microextraction-ultra violet visible system in grapes, vegetable and red wine samples.	Ashwini Kumar, Ashok Kumar Malik Dhananjay Kumar Tewary	Analytica Chimica Acta	177-181	2009	631		Corresponding	6.911	0003-2670
84	Development of a derivative spectrophotometric method for the determination of fungicide zinc ethylenebisdithiocarba mate using sodium molybdate	Kaur M., Kaur V., Malik A.K., Verma N., Singha B., Rao A.L.J.	Journal of the Brazilian Chemical Society	993-998	2009	20	5	Corresponding	2.135	0103-5053
83	SPME analysis of biological samples using solid-phase microextraction.	Ashwini Kumar, Gaurav, Ashok Kumar Malik, Frank-Michael Matysik	Analytical and Bioanalyti cal Reviews	35-55	2009	1	1	Corresponding	4.01	16182642

82	Solid Phase Micro Extraction-High Pressure Liquid Chromatography (SPME-HPLC-UV) analysis of hydoxy-alkyl-quinolones	Ashwini Kumar, Agnes Fekete, Francois Leipine, Ashok Kumar Malik, Ph. Schmitt- Kopplin	Separation Science	38	2009	1	1	Corresponding	N/A	N/A
81	Separation of the phenoxy acid herbicides and their enantiomers by capillary zone electrophoresis in presence of highly sulphated cyclodextrins	Malik A.K., Aulakh J.S., Fekete A., Philippe S.K.	Journal of the Chinese Chemical Society	1163-1167	2009	56	6	Corresponding	1.753	0009-4536
80	Solid phase microextraction-high performance liquid chromatographic determination of octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) and Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) in the presence of sodium dodecyl sulfate surfactant	Gaurav, Malik A.K., Rai P.K.	Journal of Separation Science	2173-2181	2008	31	12	Corresponding	3.645	1615-9306
79	A review on development of solid phase microextraction fibers by sol-gel methods and their applications	Kumar A., Gaurav, Malik A.K., Tewary D.K., Singh B.	Analytica Chimica Acta	14-Jan	2008	610	1	Corresponding	6.911	0003-2670
78	Gradient HPLC of antibiotics in urine, ground water, chicken muscle, hospital wastewater, and pharmaceutical samples using C-18	Kumar A., Malik A.K., Tewary D.K., Singh B.	Journal of Separation Science	294-300	2008	31	2	Corresponding	3.645	1615-9306

	and RP-amide columns									
77	RDX in the Presence of SDS and its Application to Environmental Samples	Gaurav, Ashok Kumar Malik and P.K. Rai	Journal of Chromatographic Science	609-614	2008	46	7	Corresponding	1.555	0021-9665
76	Gradient High Pressure Liquid Chromatography - UV analysis of ofloxacin, lomefloxacin, cinoxacin and nalidixic acid in urine, ground water and pharmaceutical sample using C-18 and RP-Amide columns	Ashwini Kumar, Ashok Kumar Malik and Baldev Singh	Journal of Separation Science	294-300	2008	31	2	Corresponding	3.645	1615-9306
75	Spectrophotometric methods for the determination of fluoroquinolones: A review	Kaur K., Kumar A., Malik A.K., Singh B., Rao A.L.J.	Critical Reviews in Analytical Chemistry	2-18	2008	38	1	Corresponding	3.645	1615-9306
74	Metal analysis with capillary zone electrophoresis.	Malik A.K.	Methods in molecular biology (Clifton, N.J.)	21-42	2008	384	N/A	Corresponding	1.167	1940-6029
73	Capillary electrophoretic analysis of organic pollutants.	Malik A.K., Aulakh J.S., Kaur V.	Methods in molecular biology (Clifton, N.J.)	93-118	2008	384	N/A	Corresponding	1.167	1940-6029
72	Solid Phase Microextraction-High Pressure Liquid Solid Phase Microextraction-High Pressure Liquid Chromatographic analysis of	Ashwini Kumar, Gaurav, D.K. Tewary and Ashok Kumar Malik	Journal of AOAC International	1339-1343	2008	91	6	Corresponding	2.028	1060-3271

	Norfloxacin and Enrofloxacin in Urine Sample									
71	Enhanced extraction of octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) and hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) in the presence of sodium dodecyl sulphate and its application to environmental samples	Gaurav, Malik A.K., Rai P.K.	Journal of Chromatographic Science	609-614	2008	46	7	Corresponding	1.555	0021-9665
70	Determination of norfloxacin and enrofloxacin by solid-phase microextraction/high-performance liquid chromatography	Kumar A., Dhingra G., Malik A.K., Tewary D.K.	Journal of AOAC International	1339-1343	2008	91	6	Corresponding	2.028	1060-3271
69	A new approach for simultaneous determination of Co(II), Ni(II), Cu(II) and Pd(II) using 2-thiophenaldehyde-3-thiosemicarbazone as reagent by solid phase microextraction-high performance liquid chromatography	Kaur V., Aulakh J.S., Malik A.K.	Analytica Chimica Acta	44-50	2007	603	1	Corresponding	6.911	0003-2670
68	Determination of quats in beverages and urine samples by capillary zone eletrophoresis	Aulakh J.S., Fekete A., Malik A.K., Schmitt-Kopplin, Mahajan R.K.	Annali di Chimica	1157-1167	2007	97	11-12	Corresponding	8.471	0003-4592.
67	Development of solid phase microextraction-high performance liquid chromatographic method for the	Kaur V., Malik A.K.	Annali di Chimica	1279-1290	2007	97	11-12	Corresponding	8.471	0003-4592.

	determination of copper(II) in environmental samples using morpholine-4-carbodithioate									
66	High-performance liquid chromatographic methods for the analysis of explosives	Gaurav D., Malik A.K., Rai P.K.	Critical Reviews in Analytical Chemistry	227-268	2007	37	4	Corresponding	3.645	1615-9306
65	A new method for simultaneous determination of Co(II), Ni(II) and Pd(II) as morpholine-4-carbodithioate complex by SPME-HPLC-UV system	Kaur V., Malik A.K.	Talanta	425-430	2007	73	3	Corresponding	6.556	0039-9140
64	Derivative spectrophotometry for determination of zinc(II) and cadmium(II) using diphenylcarbazone in presence of Triton X-100	Kaur V., Malik A.K., Verma N., Rao A.L.J.	Indian Journal of Chemistry - Section A Inorganic, Physical, Theoretical and Analytical Chemistry	1432-1436	2007	46	9	Corresponding	N/A	9750975
63	SPME-HPLC: A new approach to the analysis of explosives	Gaurav, Kaur V., Kumar A., Malik A.K., Rai P.K.	Journal of Hazardous Materials	691-697	2007	147	3	Corresponding	14.224	0304-3894
62	Derivative spectrophotometric determination of copper and palladium simultaneously by using MDTC as a reagent	Kaur V., Malik A.K., Verma N.	Analytical Letters	2360-2373	2007	40	12	Corresponding	2.267	0003-2719
61	Methodologies for the determination of low concentrations of	Malik A.K., Pozebon D., Dressler V.L., Zoriy M., Becker J.S.	Atomic Spectroscopy	123-128	2007	28	4	Corresponding	3.014	0195-5373

	lanthanides in biological samples by ICP-MS									
60	Simultaneous spectrophotometric determination of cobalt and nickel by partial least square regression in micellar media	Kaur V., Malik A.K., Verma N.	Annali di Chimica	237-249	2007	97	3-4	Corresponding	8.471	0003-4592.
59	Capillary electrophoretic-ultraviolet method for the separation and estimation of zineb, maneb, and ferbam in food samples	Aulakh J.S., Fekete A., Malik A.K., Mahajan R.K., Schmitt-Kopplin P.	Journal of AOAC Internatio nal	834-837	2007	90	3	Corresponding	2.028	1060-3271
58	Simultaneous determination of cobalt and nickel using morpholinedithiocarba mate (MDTC) as reagent by first and second derivative spectrophotometry	Kaur V., Malik A.K., Verma N.	Journal of the Chinese Chemical Society	715-722	2007	54	3	Corresponding	1.753	0009-4536
57	Determination of some aldehydes by using solid-phase microextraction and high-performance liquid chromatography with UV detection	Kumar A., Singh B., Malik A.K., Tiwary D.K.	Journal of AOAC Internatio nal	1689-1694	2007	90	6	Corresponding	2.028	1060-3271
56	Development of a capillary electrophoretic method for the analysis of low-molecular-weight amines from metal working fluid aerosols and ambient air	Fekete A., Frommberger M., Ping G., Lahaniatis M.R., Lintelman J., Fekete J., Gebefugi I., Malik A.K., Kettrup A., Schmitt-Kopplin P.	Electroph oresis	1237-1247	2006	27	5-6	Co-author	3.535	0173-0835
55	Applications of solid phase microextraction for the determination	Kaur V., Malik A.K., Verma N.	Journal of Separation Science	333-345	2006	29	3	Corresponding	3.645	1615-9306

	of metallic and organometallic species									
54	A review on solid phase microextraction - High performance liquid chromatography as a novel tool for the analysis of toxic metal ions	Malik A.K., Kaur V., Verma N.	Talanta	842-849	2006	68	3	Corresponding	6.556	0039-9140
53	Development of new adsorbent chitin for column preconcentration and spectrophotometric trace determination of Ziram and Zineb in synthetic, commercial samples and food-stuffs	Mehta S.K., Malik A.K., Singh B., Rao A.L.J.	Talanta	725-729	2005	67	4	Corresponding	6.556	0039-9140
52	Column preconcentration and spectrophotometric trace determination of Ziram and Zineb using chitin as an adsorbate	Mehta S.K., Malik A.K., Gupta U., Singh B., Rao A.L.J.	Indian Journal of Chemistry - Section A Inorganic, Physical, Theoretical and Analytical Chemistry	1413-1414	2005	44	7	Corresponding	N/A	9750975
51	A review on solid phase micro extraction - High performance liquid chromatography (SPME-HPLC) analysis of pesticides	Aulakh J.S., Malik A.K., Kaur V., Schmitt-Kopplin P.	Critical Reviews in Analytical Chemistry	71-85	2005	35	1	Corresponding	3.645	1615-9306
50	Solid phase microextraction-high pressure liquid chromatographic determination of Nabam, Thiram and	Aulakh J.S., Malik A.K., Mahajan R.K.	Talanta	266-270	2005	66	1	Corresponding	6.556	0039-9140

	Azamethiphos in water samples with UV detection: Preliminary data									
49	Fourth derivative spectrophotometric determination of fungicide thiram (tetramethyldithiocarbamate) using sodium molybdate and its application	Sharma V.K., Aulakh J.S., Malik A.K.	Talanta	375-379	2005	65	2	Corresponding	6.556	0039-9140
48	Column preconcentration and spectrophotometric determination of ziram and zineb in commercial samples and foodstuffs using (1,2′-pyridylazo)-2-naphthol (PAN)-naphthalene as adsorbate	Malik A.K., Sharma V., Sharma V.K., Rao A.L.J.	Journal of Agricultural and Food Chemistry	7763-7767	2004	52	26	Corresponding	5.895	0021-8561
47	Fourth derivative spectrophotometric determination of fungicide ziram (zinc(II) dimethyldithiocarbamate) in commercial samples and wheat grains	Sharma V.K., Aulakh J.S., Bansal S., Malik A.K., Mahajan R.K.	International Journal of Environmental Analytical Chemistry	1105-1110	2004	84	14-15	Corresponding	2.731	0306-7319
46	Thiram: Degradation, applications and analytical methods	Sharma V.K., Aulakh J.S., Malik A.K.	Journal of Environmental Monitoring	717-723	2003	5	5	Corresponding	N/A	1464-0325
45	Fourth-derivative spectrophotometric determination of fungicide ferbam (iron(III)	Malik A.K., Bansal S., Aulakh J.S.	Analytical and Bioanalytical Chemistry	1250-1253	2003	375	8	Corresponding	N/A	2383-093X

	dimethyldithiocarbamate) in a commercial sample and wheat grains using 2,2′-bipyridyl									
44	On-line chloride interference removal for arsenic determination in waste water and urine by ICP-MS using a modified capillary	Malik A.-K., Gómez M., Cámara C., Riepe H.-G., Bettmer J.	International Journal of Environmental Analytical Chemistry	795-804	2002	82	11-12	Corresponding	2.731	0306-7319
43	Fourth derivative spectrophotometric determination of trace silver after preconcentration with the ion pair of 2-nitroso-1-naphthol-4-sulfonic acid and tetradecyldimethylbenzylammonium chloride by microcrystalline naphthalene or column method	Taher M.A., Puri B.K., Malik A.K.	Croatica Chemica Acta	25-38	2002	75	1	Corresponding	0.659	0011-1643
42	Spectrophotometric determination of ziram in a commercial sample and wheat by extraction of its copper dimethyldithiocarbamate complex into molten naphthalene	Malik A.K., Rao A.L.J.	Journal of AOAC International	146-148	2002	85	1	Corresponding	2.028	1060-3271
41	A new sensitive method for the spectrophotometric determination of molybdenum using 3-hydroxy-2-(2'-thienyl)-4h-chromen-4-one	Malik A.K., Sharma V., Nijhawan M., Rao A.L.J.	Annali di Chimica	115-125	2002	92	1-2	Corresponding	8.471	0003-4592.
40	3-Hydroxy-2-(2'-thienyl)-4H-chromon-	Sharma V., Nijhawan M., Malik A.K., Rao A.L.J.	Zhurnal Analitiche	940-942	2001	56	9	Corresponding	N/A	0044-4669

	4-on as a spectrophotometric reagent for the trace determination of zirconium in an aqueous phase		skoj Khimii							
39	Spectrophotometric determination of cobalt, nickel palladium, copper, ruthenium and molybdenum using sodium isoamylxanthate in presence of surfactants	Malik A.K., Kaul K.N., Lark B.S., Faubel W., Rao A.L.J.	Turkish Journal of Chemistry	99-105	2001	25	1	Corresponding	1.151	1300-0527
38	Column preconcentration of trace manganese with the ion pair of 2-nitroso-1-naphthol-4-sulfonic acid tetra-decyldimethylbenzyl-ammonium chloride supported on naphthalene and determination by derivative spectrophotometry	Taher M.A., Puri B.K., Malik A.K.	Annali di Chimica	319-330	2001	91	5-6	Corresponding	8.471	0003-4592.
37	A review of analysis of pesticides using capillary electrophoresis	Malik A.K., Faubel W.	Critical Reviews in Analytical Chemistry	223-279	2001	31	3	Corresponding	3.645	1615-9306
36	3-Hydroxy-2-(2′-thienyl)-4H-chromon-4-one as a spectrophotometric reagent for the trace determination of zirconium in an aqueous phase	Sharma V., Nijhawan M., Malik A.K., Rao A.L.J.	Journal of Analytical Chemistry	830-832	2001	56	9	Corresponding	1.237	0253-3820
35	Direct	Malik A.K.	Journal of	5808-	2000	48	12	Corresponding	5.895	0021-8561

	spectrophotometric determination of ferbam (iron(III) dimethyldithiocarbamate) in commercial sample and wheat grains using 4,7-diphenyl-1,10-phenanthroline		Agricultural and Food Chemistry	5811						
34	Spectrophotometric determination of ferbam [iron(III) dimethyl dithiocarbamate] in commercial sample and wheat grains after extraction of its bathophenanthroline tetraphenylborate complex into molten naphthalene	Malik A.K., Rao A.L.J.	Journal of Agricultural and Food Chemistry	4044-4047	2000	48	9	Corresponding	5.895	0021-8561
33	Spectrophotometric determination of cobalt, nickel, palladium, copper, ruthenium and molybdenum after adsorption of their isoamylxanthate complex onto microcrystalline naphthalene	Malik A.K.	Annali di Chimica	581-591	2000	90	9-10	Corresponding	8.471	0003-4592.
32	Capillary electrophoretic determination of zinc dimethyldithiocarbamate (Ziram) and zinc ethylenebisdithiocarbamate (Zineb)	Kumar Malik A., Faubel W.	Talanta	341-346	2000	52	2	Corresponding	6.556	0039-9140
31	Potentiometric studies on the complexes of Co(II), Ni(II), Cu(II),	Mahajan R.K., Kiranpreet, Malik A.K., Kumar A., Singh V.	Transactions of the SAEST	76-78	2000	35	2	Corresponding	N/A	0036-0678

	Zn(II), Cd(II) and Pb(II) with N-4-methylphenacylidene-o-aminophenol		(Society for Advancement of Electrochemical Science and Technology)							
30	Spectrophotometric determination of cobalt, nickel, copper, palladium and molybdenum using sodium diethyldithiocarbamate in the presence of surfactants	Kaul K.N., Malik A.K., Lark B.S., Rao A.L.J.	Revue Roumaine de Chimie	221-226	2000	45	3	Corresponding	0.410	0035-3930
29	Simple and sensitive spectrophotometric determination of ziram, zineb and ferbam in commercial samples and foodstuffs using phenylfluorone	Malik A.K., Kapoor J., Rao A.L.J.	Journal of Environmental Monitoring	367-371	2000	2	4	Corresponding	N/A	1464-0325
28	Spectrophotometric determination of ferbam (iron(III) dimethyldithiocarbamate) in commercial sample and wheat grains using 4,7-diphenyl-1,10-phenanthroline after extraction into mesityl oxide	Malik A.K.	Journal of Environmental Monitoring	151-153	2000	2	2	Corresponding	N/A	1464-0325
27	Spectrophotometric determination of cobalt, nickel, palladium, copper, ruthenium and	Malik A.K., Rao A.L.	Journal of Analytical Chemistry	746-749	2000	55	8	Corresponding	1.237	0253-3820

	molybdenum after extraction of their isoamyl xanthate complexes into molten naphthalene									
26	Capillary electrophoretic determination of tetramethylthiuram disulphide (Thiram)	Malik A.K., Faubel W.	Analytical Letters	2055-2064	2000	33	10	First	2.267	0003-2719
25	Capillary electrophoretic determination of dithiocarbamates and ethyl xanthate	Malik A.K., Faubel W.	Fresenius' Journal of Analytical Chemistry	211-214	2000	367	2	First	N/A	0937-0633
24	Determination of the fungicide ferbam in wheat grains after adsorption onto microcrystalline naphthalene.	Malik A.K., Malik A.K.	Journal of AOAC Internatio nal	971-975	2000	83	4	First	2.028	1060-3271
23	A new spectrophotometric method for the determination of maneb in commercial formulations	Malik A.K., Faubel W., Kapoor J., Gupta U., Rao A.L.J.	Internatio nal Journal of Environm ental Analytical Chemistry	241-348	2000	78	3-4	First	N/A	0306-7319
22	Capillary electrophoretic determination of ferric dimethyldithiocarbama te as iron(III) chelate of EDTA	Malik A.K., Seidel B.S., Faubel W.	Journal of Chromato graphy A	365-368	1999	857	1-2	First	4.601	0021-9673
21	A review of capillary electrophoretic separations and their studies by nuclear magnetic resonance	Malik A.K., Faubel W.	Journal of Capillary Electroph oresis and Microchip Technolog y	97-108	1999	6	3-4	First	N/A	10795383
20	Spectrophotometric	Malik A.K., Seidel B.S., Faubel	Pest	1000-	1999	55	10	First	4.462	1526-4998

	determination of ferbam (iron(III) dimethyldithiocarbamate) in a commercial sample and wheat grains using 4,7-diphenyl-1,10-phenanthroline	W.	Management Science	1003						
19	Methods of analysis of dithiocarbamate pesticides: A review	Malik A.K., Faubel W.	Pest Management Science	965-970	1999	55	10	First	4.462	1526-4998
18	Capillary electrophoretic determination of disodium ethylene bisdithiocarbamate (Nabam) and sodium diethyldithiocarbamate (NaDDC)	Malik A.K., Seidel B.S., Faubel W.	International Journal of Environmental Analytical Chemistry	159-164	1999	75	1-2	First	2.731	0306-7319
17	Simple and sensitive method for determination of tetramethylthiuram disulphide (Thiram)	Malik A.K., Kaul K.N., Lark B.S., Rao A.L.J.	Pest Management Science	104-106	1998	53	1	First	4.462	1526-4998
16	Polarographic Determination of Zineb and Maneb	Malik A.K., Rao A.L.J.	Journal of the Indian Chemical Society	491-492	1998	75	8	First	0.243	0019-4522
15	Spectrophotometric determination of iron(III) dimethyldithiocarbamate (ferbam)	Malik A.K., Rao A.L.J.	Talanta	177-183	1997	44	2	First	6.556	0039-9140
14	Spectrophotometric determination of ferbam (ferric dimethyl-dithiocarbamate) by dissolving its copper (II) complex into triton X-100	Malik A.K., Kaul K.N., Lark B.S., Rao A.J.L.	Journal of Surface Science and Technology	23-28	1996	12	1-4	Co-author	N/A	0970-1893

13	Spectrophotometric determination of maneb by ternary complex formation with PAR and CTAB	Kapoor J., Kumar A., Gupta U., Rao A.L.J.	Talanta	2061-2065	1994	41	12	Co-author	6.556	0039-9140
12	Extraction spectrophotometric determination of maneb with 1-(2′-pyridylazo)-2-naphthol (PAN)	Rao A.L.J., Malik A.K., Kapoor J.	Talanta	201-203	1993	40	2	Co-author	6.556	0039-9140
11	Titrimetric determination of dithiocarbamate and xanthate pesticides using mercuric acetate	Kumar A., Paul Y., Rao A.L.J.	Journal of the Indian Academy of Forensic Sciences	19-24	1992	31	1	First	0.16	9710973
10	Spectrophotometric Determination of Ziram by Coprecipitating the Corresponding Copper(II) or Palladium(II) Complex with Naphthalene	Malik A.K., Rao A.L.J.	Journal of the Chinese Chemical Society	235-238	1992	39	3	First	1.753	0009-4536
9	Spectrophotometric determination of ferric dimethyldithiocarbamate (ferbam) in formulations, grain and apples using 1, 10-phenanthroline	Malik A.K., Rao A.L.J.	Pest Management Science	69-72	1992	35	1	First	4.462	1526-4998
8	Spectrophotometric determination of gold using N-methylanilinecarbodithioate as a reagent	Chopra S., Malik A.K., Rao A.L.J.	Journal of the Indian Chemical Society	637-638	1991	68	11	Co-author	0.243	0019-4522
7	Spectrophotometric determination of ruthenium(III) and rhodium(III) with n-amylthioglycolate	Kumar Malik A., Gupta U., Rao A.L.J.	Journal of the Indian Chemical Society	587-589	1991	68	10	First	0.243	0019-4522

6	Experimental and discussion	Malik A.K., Paul Y., Rao A.J.L.	International Journal of Environmental Studies	199-200	1991	38	2-3	First	2.731	0306-7319
5	Spectrophotometric determination of ferbam using sodium selenite	Kumar A., Rao A.L.J., Puri B.K.	International Journal of Environmental Analytical Chemistry	159-166	1991	44	3	First	2.731	0306-7319
4	Spectrophotometric determination of ziram, ferbam and zineb with diphenylcarbazone	Malik A.K., Rao A.L.J.	Talanta	941-944	1991	38	8	First	6.556	0039-9140
3	Spectrophotometric method for determination of tetramethylthiuram disulphide by extraction of its chromium complex into isobutyl methyl ketone	Rao A.L.J., Malik A.K.	Journal of the Indian Chemical Society	615-616	1990	67	7	Co-author	0.243	0019-4522
2	Spectrophotometric determination of some dithiocarbamates	Malik A.K., Rao A.L.J.	Talanta	1205-1207	1990	37	12	First	6.556	0039-9140
1	Spectrophotometric determination of Ziram (zinc dimethyl dithiocarbamate) pesticide with selenite (IV)	Rao A.L.J., Kumar A.	Journal of the Indian Academy of Forensic Sciences	49-50	1990	29	1	First	0.16	9710973