

**DR SIPPY KALRA**

**Principal Scientist**

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## **SKILL SUMMARY**

- More than Fifteen years' multidisciplinary work experience in research and carbon industry collectively
- Ability to do efficiently Air and Water Quality Monitoring
- Data handling on environmental samples and Collection of environmental samples and chemical analysis
- ISO requirement, quality assurance, QA/QC, ISO 170025, ISO Guide 35 for environmental laboratory
- Expertise on various analytical tools like TGA, DSC, HPLC, AAS, ICPMS, GC, FTIR, XRD, SEM, TEM, Optical microscope
- Modification of bitumen / pitches and its Emission characteristics
- Modification of carbon nano tubes, VGCF, pitches, carbon fibers to develop high density carbon composites
- Work experience on various carbonization and graphitization furnaces used in carbon fibers and composites material development
- Industrial work experience on the production plant of graphite electrodes

## **PROFESSIONAL HIGHLIGHTS**

- Research and Development in Environmental science, material science and astrobiology
- Quality assurance practices for laboratory

## **RESEARCH INTERESTS**

- **Determination of trace metals, organic compounds in urban dust and road runoff**
- **Assessment of pollution loads from road runoff**
- **Nano composites for trace removal from wastewater**
- **Exposures assessment for pollutants**

## **RELEVANT PROFESSIONAL EXPERIENCE**

### **Projects Handled:**

1. Procurement of air pollution mobile van State – of – art Pollutant – specific Air Quality Analyzers for monitoring and assessment.
2. Estimation of fuel losses and assessment of Air Quality at selected traffic intersections of Delhi.
3. Geotechnical investigations and feasibility of de-watering in water logged area along the Gurgaon canal both side from RD 105000 to 149000, Hathin, Palwal.
4. Pilot Study for the Development of Surface enhanced Raman Scattering (SERS) based sensors for the detection of Environmental Pollutants (Air/Water/Soil).
5. Characterization of Non methane hydrocarbons and VOCs near road side / traffic Intersections of Delhi
6. Physicochemical characterization of Particulate matter near road side / traffic intersections of Delhi.
7. Assessment of pollution load from road run off.
8. Study of benzene and VOCs in different corridors of Delhi.
9. Modification of bitumen and its emission characteristics.
10. Studies of non methane hydrocarbons in the atmospheric environment of Delhi region.
11. To investigate the effect of road traffic on indoor air quality within metro station.
12. Strengthening the quality infrastructure in environmental analytics

### **Selected Accomplishments**

- Established Environmental Chemistry laboratory in the department
- Determination of traces in road runoff and quantification of pollution loads
- Physicochemical characterization of road dust for the development of certified reference material
- Emission characteristics from modification of bitumen at Industrial level
- Determination of lower non methane hydrocarbons and volatile organic compounds in the ambient air at traffic intersections

## **EDUCATION**

**Ph.D.** (Chemistry) (2000) D S B campus, Kumaun University, India

**M.Sc.** (Physical Chemistry) (1995) D S B campus, Kumaun University, India

## **TRAINING/WORKSHOPS**

1. Training cum workshop on the production of certified reference material organized by CSIR and PTB, Germany. INSTRUCTOR : Dr Wolfram Bremser and Dr Detlef Lueck
  - ISO requirements and Quality assurance and strategies for CRMs
  - Data Assessment and Uncertainty evaluation
  - Preparation of CRMs in water and measurements of inorganic and organic traces
2. Training workshop on Metrology in Chemistry (MiC) under Indo – German Technical cooperation in MiC in Environmental Analytics organized by CSIR and PTB, Germany. INSTRUCTOR: Prof Leito
  - ISO requirements and quality assurance
  - Data assessment, traceability evaluation and proficiency Testing
  - Preparation of CRMs in air samples and measurements traces
3. Workshop and training on “material characterization techniques” organized by CSIR, India,
  - Theoretical lectures on various analytical tools used in environmental analysis
  - Hands on experiments for collection of environmental samples, chemical treatments for chemical analysis of traces in collected samples

## **AWARDS**

- **Young Scientist Award, CSIR, India (2009)**
- **Guest Scientist Award, BAM, Germany (2011)**

## **MEMBERSHIP:**

- **Life member of Indian Carbon Society (2002 onwards)**
- **Life member of Indian Metrology Society (2008 onwards)**
- **Yearly member of World Research Council (2019 – 2020)**

## **PUBLICATIONS**

Twenty scientific research papers has been published in SCI journals

More than 25 research papers have been presented in various national and international conferences

Three book chapters have been published

One patent has been granted.

Five technical reports for various projects

### **Research papers published in scientific journals:**

1. V. B. Yadav, R. Gadi and **S Kalra.**, (2019). Adsorption of lead on clay-CNT nanocomposite in aqueous media by UV-Vis-Spectrophotometer: Kinetics and thermodynamic studies. Journal of Emergent Materials (Springer) [Accepted September 2019]
2. Vijay Bahadur Yadav, **Sippy Kalra**, Ranu Gadi, Clay based nanocomposites for the removal of heavy metals from water: a review, Journal of Environmental Management, 232, 2019, 803-817
3. Synthesis and characterization of novel nanocomposite by using kaolinite and carbon nanotubes, Vijay Bahadur Yadav, Ranu Gadi and **Sippy Kalra**, Applied Clay Science, Volume 155, 2018, 30-36.  
<https://doi.org/10.1016/j.clay.2017.11.043>
4. Source Apportionment for Lower Non methane hydrocarbons in the ambient air of Delhi – a mega city in India, **Sippy K Chauhan**, Anuradha Shukla, Rina Singh and Vikram Singh, Indian Journal of Environmental Protection, Vol 34, No 8, August 2014, pp 682 – 688.
5. Determination of trace metals in the road runoff of Delhi, **Sippy K Chauhan**, Vijay Bahadur Yadav and Anuradha Shukla, ISH News, The India Society for Hydraulics, ISSN – 0971-5002, Vol23, No 1, July 2014, pp 1- 4.
6. Recent trends of volatile organic compounds in ambient air or its health impacts : a review  
**Sippy K Chauhan**, Neha Saini, Vijay Bahadur Yadev  
International Journal for Technological Research in Engineering, Vol 1, Issue 8, April 2014.
7. Non methane hydrocarbons: their sources / sinks: a review, **Sippy K Chauhan**, Anuradha Shukla & Prabhat K Gupta, Indian Journal of Air Pollution Control, Vol XIII, No. 1 & 2 (2013 ), pp 1 – 10.
8. Carbon nanotubes for Environmental Protection : a review  
**Sippy K Chauhan**, Simpi Dutta, Anuradha Shukla, S Gangopadhyay and Lalit M Bharadwaj  
Environmental Chemistry Letters, 2012, DOI10.1007/928-94-007-2442-6\_3
9. Excessive emissions of non methane hydrocarbons in Delhi  
Nidhi Tarsolia, **Sippy K chauhan** and Anuradha Shukla  
online periodicals CSIR – NISCAIR, 19(2), Dec 2011, pp 188 - 193

10. Recent trends of the emission characteristics from road construction industry.  
**Sippy K Chauhan**, Sangeeta, Anuradha Shukla and S Gangopadhyay  
Environmental Science and Pollution Research (2010) 17:1493b1501  
DOI 10.1007/s11356-010-0327-x
11. Determination of arsenic and mercury metals in suspended particulate matter by flame / flameless atomic absorption spectrometer.  
Nahar Singh, **Sippy K Chauhan**, Trailokya Saud, Mohit Saxena, Daya Soni, Khem Singh, Alok Mukherjee, T.K. Mandal, J.K. Bassin and Prabhat K. Gupta  
Atmospheric Pollution Research,1 (2010) 112- 117
12. Recent Trends of Certified Reference materials for road transportation sector.  
**Sippy K Chauhan**, Prabhat K Gupta, Anuradha Shukla and S Gangopadhyay  
Journal of Environmental Monitoring and assessment DOI 10.1007/s/066/-008-0493-1
13. Environmental Aspects of biofuels in Road transportation: a Review  
**Sippy K Chauhan**, S Gangopadhyay and Nahar Singh, Environmental chemistry letters, 2008, DOI 10.1007/s/0311-008-0185-7