

(Resume of Dr. PRAKASH KUMAR)



! **FULL NAME** : Dr. Prakash Kumar
 ! **DATE OF BIRTH** : 19-11-1961
 ! **CONTACT ADDRESS** : Flat No 703, Radhe B Tower,
 Pashabhai Park, Racecourse
 Vadodara, India -390007
Mobile : 09998217184
email: pkv61@yahoo.com

! QUALIFICATIONS

Ph.D. 1991, M.D. University , Rohtak , India. Physical Chemistry, .
M.Sc. 1984, M.D. University , Rohtak , India. Physical Chemistry, **I division**
B.Sc. 1982, Punjab University ,Chandigarh, India, Chemistry, Botany, Zoology, **I division**

! RESEARCH SCHOLARSHIPS AWARDED

Visiting Scientist : (KOSEF- Brain Pool Program) With Dr.Soon Haeng Cho , Director Separation Processes Team, Korea Institute of Energy Research (KIER) at Taejon, South Korea Jan-98 - Jan-1999.

Senior Research Fellow (C.S.I.R,India) From January 1991 to July 1991.

Research Fellow (M.D,University Scholarship) February 1990 to December 1990

Junior Research Fellow (U.G.C,India) December 1986 to February 1990.

! TOTAL RESEARCH EXPERIENCE

30 years (After PhD), Scientist in Catalysis and Adsorptive separations group of R&D Centre at RIL (IPCL) Baroda, since 1991.

! WORK EXPERIENCES

CEO @ Adsorption Technologies November 2021 onwards

Astt Vice President (R&D) & Head Adsorption division: March 2014 to November 2021 at RIL, Vadodara.

Sr. General Manager (R&D) & Team leader: July 2011 – March 2014.

General Manager (R&D) & Team Leader: September 2005- July 2011-RIL

Sr. Manager (R&D) & Project Leader: December 2003-Research Centre IPCL/RIL

Deputy Manager : July 2003-December 2003 , Research Centre IPCL.

Senior Research Officer From 1995-2003 Research Centre, IPCL

Research Officer From 1991 to 1995 at Research Centre, IPCL.

! PROFESSIONAL VISIT ABROAD

South Korea National Laboratory for Gas separations at Korea institute of Energy Research (KIER) South Korea supported by Korean science and engineering foundation

(KOSEF) of Korean Government R&D collaboration with Korea Institute of Energy Research, Taejon, Korea on adsorption separation research for light olefins recovery.

USA : Participation and presentation at North American catalysis Society meeting at Pittsburgh June 2015

Japan : Invited lecture at Fukuoka University 2017

! REFERENCES

1. **Dr. Satish Vats** , Head Adsorbents R&D Centre, UOP Honeywell, Gurgaon INDIA.
2. **Mr. Manoj Srivastva** , President , Haldia Petrochemicals, India.
3. **Dr. Soon Haeng Cho**, President, Genseng , South Korea
4. **Prof. S. Kansal** , Chemical Engg Deptt , Panjab University Chandigarh
5. **Dr. Jong Nam Kim**, President, Gas Separation Processes , Korea Institute of energy Research, TAEJON, S.KOREA.

Managerial Experience

A) New R&D centre facility creation : Senior team member for concept/design/execution of RIL R&D centre at Reliance corporate park Mumbai of total investment of Rs 600 Cr

1. Complete execution of finer details of laboratory design/utilities/instruments of chemical synthesis and catalysis (Petrochemicals) vertical of Rs 120Cr .
2. Services creation for new centre through vendors finalization.
3. Recruitment/training of scientists in chemical synthesis and catalysis vertical.

B) Leading R&D team connectivity with RIL Production, Central technology services, Marketing ad procurement for providing technical support and enhancing R&D capability and visibility.

C) Leading research programs for strategic new technology development programs with research institutes outside RIL for joint Research programs with EIL,IIT Mumbai, BPCL, CSSRI Karnal, YS Parmar University Solan.

D) Training and Mentoring of scientists and technical staff , for new product development , creating new teams and enhancing connectivity within teams based on expertise and facilities.

E) Leading annual R&D Budgeting and value generation from research projects and technical support to production. Under leadership value generation of Rs 140 Cr.

" **RESEARCH / HANDS ON WORKING EXPERIENCE -30 years (After Ph.D)**

Planning and execution of Projects related to adsorbents & heterogeneous catalysts development, adsorptive process development/improvement related to research and process support as Team Leader in coordination with Production and Technology Departments of all the six site locations of RIL/IPCL.

Expert Technical support, on adsorbents (Zeolite molecular sieves, activated alumina) and clay catalyst to Technical Services/ Production for assisting extracting best life and trouble shooting and in procuring right grade of product from various international suppliers.

Experience : Inspection of adsorber vessels, loading of adsorbents like zeolite molecular sieves, alumina, clays and Bauxite, startup and stabilization. Loading, Unloading and disposal of adsorbents.

Initiation of new world class adsorption/catalysis lab at Reliance R&D with budgeting/ procurement of new equipments, manpower and training.

Commercial experience of manufacturing of Zeolite molecular sieves, activated alumina, precipitated silica and acid activated clays.

Experience in laboratory/pilot and commercial scale up of adsorbents/catalysts like zeolite molecular sieves, activated alumina, activated clays, aluminosilicate gels, activated carbons, controlled porosity mesoporous silica, metal oxide supported adsorbents for purifying polyolefin plant feed stocks, air driers and solvent driers.

Design/assembling and adsorbent/catalyst evaluation on pilot scale fixed bed reactor for high temperature for BTX stream purification (Bromine Index reduction) units and hydrocarbons trace and bulk purification using Zeolite/ Alumina/ Silica adsorbents in petrochemical or refinery complex.

Hands on work experience on Independent handling of different catalyst/adsorbents analytical equipments like Pilot scale Fixed bed catalyst reactor, 4 bed PSA pilot plant, High Pressure Cahn Balance, GC, UV, Mercury Porosimeter, BET surface area, Residual Gas Analyser (Mass Detector) DTA/TGA etc. Interpretation of XRD, GC mass, IR results.

Active Team Member in one international and three national research collaborations and trained young researchers in adsorbent preparation and characterization.

Patent writing/filing/defending and IPR experience.

Administrative Experience like chemicals and equipment procurement (specifications fixing, technical comparative evaluations etc), maintenance, **SAP** (system application product) user and other departmental responsibilities.

Professional achievements:

A. Processes developed/implemented

- Sulfolane & NMP purification
- Thermic fluid purification
- Refrigerants drying
- Cracked gas drying

- Chloride removal from BTX streams
- Regenerable zeolite catalytic process type for BTX purification for Refinery.
- Adsorptive process for the separation of light alkane/alkene mixtures (In collaboration with Korea Institute of Energy Research, S.Korea)
- Process for purification/recovery of olefin monomers from polymer plant off-gases
- Process for inorganic and organic chlorides removal from hydrocarbons.
- Process for aromatics removal from hydrocarbon streams
- Process for purification of BTX streams through unsaturates removal.
- Pressure swing adsorption process package for oxygen production for medical applications (in collaboration with IIT, Bombay)
- Process for the adsorptive separation of methane and nitrogen
- Process for paraffin's separation from hydrocarbon streams.
- Process for VCM adsorption and destruction using acid supported clays.
- Online process for thermic fluid purifications using adsorbents for acidic and oxidized impurities removal.

B. New Products developed and commercialized:

- MCM based catalyst for olefins removal from BTX streams.
- Chloride & H₂S removal catalyst from hydrocarbon streams
- Activated clay catalyst used for the purification of hydrocarbons for olefins removal.
- Olefin selective adsorbents for separating ethylene/ethane and propylene propane
- Zeolite molecular sieve for ultra drying of cracked gases involving novel pore engineering techniques
- A process for the production of molecular sieve adsorbent for oxygen-enrichment of air by pressure swing adsorption .
- Process for the production of molecular sieve for separation of normal paraffin from kerosene
- Zeolite coated polyester fabric for fruit packaging.
- Refinery sulphur as fertilizer and sodic soil amendment applications.
- Refinery sulphur as bitumen additive for road application.
- Adsorbents for acidic and oxidized impurities removal.
- Zeolite molecular sieves for oxygenates removal from aromatics.
- Macroporous adsorbent for iron particulates removal as catalysts guard bed.

C. Publications (List on request)

25 original publications mostly in international journals and conferences.

D. Patents granted/published/filed (List on Request)

> 60, Indian, U.S., Canadian , Korean & Chinese patents

E. Technical Documents

Over 250 technical reports on the work carried out to support RIL operations and marketing activities.

Essential and Desirable Skills:

- Forming and shaping of catalysts adsorbent materials, and evaluation , scale up and commercial production.
- Evaluation of P-X selective molecular sieve and paraffin/iso paraffin separation zeolite molecular sieves for SMB separation.
- Testing of adsorbents for chloride and olefins removal from Aromatics.
- Testing of adsorbents for driers
- Adsorption measurements in equilibrium and dynamic modes
- Design of absorbers for drying, purification and separation processes suitable for gas and liquid adsorption.
- GC, GC-MS, IR , Surface Area, Pore size measurements
- Patents and intellectual property rights
- Establishing laboratory and directing research in various areas in physical / surface/inorganic chemistry particularly, catalysis, adsorption.
- Networking and Establishing collaborative research programs

Professional recognition's

- **International award Winner** : Hydrocarbon Processing Best Petrochemical Technology awards October 2022 for RELORCAT catalyst technology for olefins removal from BTX streams.
- **International award Finalist** : Hydrocarbon Processing Best Petrochemical Technology awards October 2021 for Online purification of thermic fluids with RELAD
- **CII Industrial innovation award winner 2021** winner for adsorptive technology development and commercialization of thermic fluids, sulfolane and NMP online purification.
- **National award winner for innovation** for Straight sulfur fertilizer from refinery sulfur awarded by Chamber of commerce , Mumbai for 2014.
- **National award winner for Technology Innovation** (2013) for “ Polymeric packaging for extending shelf life of agriculture, floriculture and horticulture produce in Industrial category of Polymers in agriculture and water conservation” awarded by Ministry of Chemicals and Fertilizers, Department of chemicals and petrochemicals, Govt of India.
- **RIL awards “Edison Award” , RTG awards** from Reliance Technology Group, RIL for valuable contribution in technology in year 2012-2017.
- **Technical editor** of Journal of surface science and technology.
- **Research Paper Reviewer** to the American Chemical Society's Journal “ Industrial and Engineering Chemistry Research” ,

- **Member . Board of studies** for Deen Bandhu University of Science of technology at Murthal, Sonapat, Haryana.
- **Member, Board of Governors for TEQIP-III, Panjab University , Chandigarh**
- **Member & V.C.Nominee,MSU University Vadodara** for PhD selection committee .
- **Examiner/reviewer** of MTech (Chemical Engg), NIT Surat.
- **Guided** over 25 M.Sc.and M.Tech/B.Tech students from M.S. University, Baroda, IIT Mumbai and DCRUST Murthal Haryana.

Research collaborations & coordination

National: Joint R&D Programs with, IIT Bombay (Medical PSA), CSSRI , Karnal for sodic soil amendment using refinery sulfur , Engineers India Ltd. (H2 PSA), Gurgaon, Dr. Y.S Parmar University of horticulture, Solan (Fruits packaging polymers), and IISC Bangalore (C8 aromatics isomers separation)