CURRICULUM VITAE

Dr. Suhas
Msc, PhD (IIT Roorkee), FICCE
Postdoc (France, Portugal)
Assistant Professor
Department of Chemistry
Gurukula Kangri University
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Education

Ph. D. (1998-2003)	:	Chemistry Indian Institute of Technology Roorkee, INDIA
M. Sc. (1996-1998)	:	Chemistry Indian Institute of Technology Roorkee, INDIA
B. Sc. (1993-1996)	:	Chemistry, Physics, Mathematics Ch. Charan Singh University, Meerut, INDIA

Teaching/Research Experience (over 16 years in India, Germany, France and Portugal): over 6500 citations with h index 19

1. Working as Assistant Professor in Department of Department of Chemistry, Gurukula Kangri Vishwavidyalaya, Haridwar since March 2011.

2. Worked as Post Doctoral Fellow at Centro de Química de Évora, Universidade de Evora, Portugal in the project entitled **"Lignin and Derived Carbonaceous Materials for Environmental Applications and Energy Storage"** from 2005-2011.
3. Besides working as Post Doctoral Fellow at Centro de Química de Évora, Universidade de Evora, Portugal in the project entitled **"Lignin and Derived Carbonaceous Materials for Environmental Applications and Energy Storage"** I was also engaged in project **"Influence of the composition of lignocellulosic precursors on the characteristics of the activated carbon produced"** from 2008-2011.

4. Worked as Post Doctoral Fellow in field of **Adsorption and Low Cost Adsorbents** at Department of Chemistry, IIT Roorkee with Prof. V K Gupta from 2004-2005.

5 Worked as Post Doctoral Fellow in the project **"Production of Carbonaceous Porous Materials from Composite Carbon Fibers"** at Ecole des Mines de Nantes, France from 2003-2004.

6 Worked as Junior Research Fellow in project of Ministry of Environment and Forests (Govt. of India) **"Treatment and Utilization of Liquid and Solid Waste Materials Generated in Chrome Tanneries, National Fertilizers and Steel Plants"** from 1998-2002.

Ph.D. (1998-2003)

Thesis Topic: Development of Low Cost Adsorbents from Industrial Wastes for the Removal of Toxic Substances.

M.Sc. (1996-1998)

Title of project during M.Sc. : Studies on the Adsorption of Zinc(II) ions on Red Mud – An Aluminium Industry Waste.

Industrial Work Experience

Worked as a chemist in Asian Paints (India) Limited.

Research Projects as PI

1. DST, New Delhi funded project entitled "Hydrothermal Carbonization: A Novel Green Methodology for Hydrochar Production, its Applications in the Development of Sustainable Carbon Materials and Utilization in Water Treatment" from 2020-2023

Professional Skills

Physioanalytical Techniques/Instruments Handled:

UV-Vis Spectrophotometery (Shimadzu 160A, Shimadzu 1601, Nicolet Evolution 300, Perkin Elmer Lambda 850), BET surface area analyser (Micromeritics ASAP2010, Micromeritics ASAP2020, Sorptomatic 1990, Quadrasorb 3SI, Autosorb), SEM (JEOL JSM-5800LV), XRD (Bruker AXS-D8 Advance powder diffractometer), TGA (Rheometric Scientific TG1500), CHNS analyser (Euro Vector CHNS+O analyzer, Thermo Finigan CHNS-O analyser model EA 1112, Elementar Vario EL III CHNOS analyser), FTIR (Perkin Elmer model Paragon 1000PC).

Computational Proficiency:

Command in Microsoft Windows, MS DOS, MS Office, EndNote X, Grapher, Origin, ISIS Draw. Adequate programming skills in C language. Additional proficiency in UNIX, Linux and various windows based softwares.

Prizes/Awards

1. Biography selected in prestigious Marquis Who is Who 2011 edition.

2. Recipient of Postdoctoral Fellowship by Fundação para a Ciência e a Tecnologia (FCT), Ministry of Science Technology and Higher Education, Portugal.
3. Received First prize for the business proposal **"EURASIA Extracts"** at Ide@ue 2007 Contest organized by OTIC Évora (Technology and Knowledge Transfer Office of Évora) and GAPI FML-UE (Industrial Property Promotion Supporting Office of Luís de Molina Foundation-University of Évora), Portugal. The jury was composed of members of the University of Évora, IAPMEI, Espírito Santo Bank, AlenBiz (Alentejo Business Angels Club), OTIC Évora and GAPI FLM-UE
4. Recipient of Postdoctoral Fellowship at Ecole des Mines des Nantes, France by Pays la Loire, France.
5. Recipient of DST-DAAD fellowship, visited University of Hannover, Germany from 16-02-2001 to 15-03-2001.

Visits Abroad

Visited France, Germany, Portugal, Spain and Scotland for various conferences, scientific meetings and research activities

Academic Activities

Courses taught

Physical Chemistry and Inorganic Chemistry to UG students and Bioinorganic chemistry; Catalysis, AAS, ICP, Mass Spectrometry and Analysis of Water and Waste Water to PG students

M.Sc. Project Work Guidance

Guided 35 students

Ph.D. Thesis Guidance

2 theses in progress.
2 theses submitted
2 theses awarded

Research Interest and Expertise

Development of adsorbents especially activated carbons and low cost adsorbents, adsorption, biosorption, hydrothermal treatment, energy storage (using supercapacitors, applications of electroanalytical methods in particular cyclic voltametry and amperometry for testing of capacitors), nano materials, emerging contaminants, removal of pollutants and water treatment.

Publications

1. A. K. Jain, **Suhas** and A. Bhatnagar, "Methylphenols Removal from Water by Low - Cost Adsorbents", ***Journal of Colloid and Interface Science***, 251(1), 39-45 (2002). [Impact factor-6.361]
2. A. K. Jain, V. K. Gupta, A. Bhatnagar and **Suhas**, "A Comparative Study of Adsorbents Prepared from Industrial Wastes for the Removal of Dyes", ***Separation Science and Technology***, 38(2), 463-481 (2003). [Impact factor-1.354]
3. A. K. Jain, V. K. Gupta, A. Bhatnagar, S. Jain and **Suhas,** "A Comparative Assessment of Adsorbents Prepared from Industrial Wastes for the Removal of Cationic Dye", ***Journal of the Indian Chemical Society,*** 80, 267-270 (2003). [Impact factor- 0.158]
4. A. K. Jain, **Suhas**, S. Jain and A. Bhatnagar, "Utilization of Industrial Wastes for the Removal of Anionic Dyes", ***Toxicological and Environmental Chemistry,*** 84(1-4), 41-52 (2003). [Impact factor-1.095.]
5. A. K. Jain, V. K. Gupta, A. Bhatnagar and **Suhas** "Utilization of Industrial Waste Products as Adsorbents for the Removal of Dyes", ***Journal of Hazardous Materials,*** B101, 31-42 (2003). [Impact factor-7.650]
6. V. K. Gupta, I. Ali, **Suhas** and D. Mohan, "Equilibrium Uptake and Sorption Dynamics for the Removal of a Basic Dye (Basic Red) Using Low Cost Adsorbents", ***Journal of Colloid and Interface Science,*** 265(2), 257-264 (2003). [Impact factor-6.361]
7. A. K. Jain, **Suhas**, S. Jain and A. Bhatnagar, "Removal of 2-fluoro and 2-iodophenol from Aqueous Solutions Using Industrial Wastes", ***Environmental Technology,*** 25(1) 15-22 (2004). [Impact factor-1.918]
8. A. K. Jain, V. K. Gupta, S. Jain and **Suhas,** "Removal of Chlorophenols Using Industrial Wastes", ***Environmental Science and Technology ACS*** 38(4), 1195-1200 (2004). [Impact factor-7.149]
9. V. K. Gupta, **Suhas,** I. Ali and V. K. Saini, "Removal of Rhodamine B, Fast green and Methylene blue from Wastewater Using Red mud – an Aluminum Industry Waste", ***Industrial and Engineering Chemistry Research ACS*** 43(7), 1740-1747 (2004). [Impact factor-3.375]

10. V. K. Gupta, D. Mohan, **Suhas,** and K. P. Singh, "Removal of 2-Aminophenol Using Novel Adsorbents", ***Industrial and Engineering Chemistry Research ACS,*** *45*(3), 1113 - 1122 (2006). [Impact factor-3.375]
11. V. K. Gupta, I. Ali, **Suhas** and V. K. Saini, "Removal of 2,4-D and Carbofuran Pesticides Using Fertilizer and Steel Industry Wastes", ***Journal of Colloid and Interface Science*****,** 299(2), 556-563 (2006). [Impact factor-6.361]
12. **Suhas**, P.J.M. Carrott and M.M.L. Ribeiro Carrott, "Lignin–From Natural Adsorbent to Activated Carbon: A Review", ***Bioresource Technology*****,** 98, 2301-2312 (2007). [Impact factor-6.669]

    This article
    - ✓ **One of the most cited articles of Bioresource Technology**
    - ✓ **Selected as one of the top 25 hottest articles at Science Direct.**

13. P.J.M. Carrott, M.M.L. Ribeiro Carrott, **Suhas**, P.A.M. Mourão, C.I. Guerrero and L.A. Delgado, "Reactivity of cork and lignin for the production of activated carbons", ***Materials Science Forum***, 587-588, 618-622 (2008). [Impact factor-N.A.]
14. P.J.M. Carrott, **Suhas**, M.M.L. Ribeiro Carrott, C.I. Guerrero and L.A. Delgado, "Reactivity and porosity development during pyrolysis and physical activation in CO_2 or steam of kraft and hydrolytic lignins", ***Journal of Analytical and Applied Pyrolysis***, 82, 264-271 (2008). [Impact factor-3.470]
15. P.J.M. Carrott, M.M.L. Ribeiro Carrott, T.S.C. Vale, L. Marques, J.M. Valente Nabais, P.A.M. Mourão and **Suhas,** "Characterisation of surface ionisation and adsorption of phenol and 4-nitrophenol on non-porous carbon blacks", ***Adsorption Science and Technology,*** 26**,** 827-841 (2008). [Impact factor-1.2]
16. **Suhas**, P.J.M. Carrott and M.M.L. Ribeiro Carrott, "Using alkali metals to control reactivity and porosity during physical activation of demineralised kraft lignin", ***Carbon,*** 47, 1012-1017 (2009). [Impact factor- 7.466].
17. V. K. Gupta, and **Suhas, "**Application of low cost adsorbents for dye removal- A review", ***Journal of Environmental Management,*** 90, 2313-2342 (2009). [Impact factor-4.865]

    This article
    - ✓ **Selected as one of the top hottest articles (ranked number 1 in April–September 2009) at Science Direct in Journal of Environmental Management.**
    - ✓ **Selected as one of the top hottest articles (ranked number 2 in October–December 2009) at Science Direct in Journal of Environmental Management.**

- ✓ **Selected as one of the top hottest articles (ranked number 1 in January–September 2010) at Science Direct in Journal of Environmental Management.**
- ✓ **Selected as one of the top hottest articles (ranked 1 in October 2009–September 2010 Academic year) at Science Direct in Journal of Environmental Management.**
- ✓ **Selected as one of the top hottest articles in most downloaded section (ranked number 2 in April 2010) at Science Direct in Journal of Environmental Management.**
- ✓ **Selected as one of the top hottest articles in most downloaded section (ranked number 1 in November 2010) at Science Direct in Journal of Environmental Management.**
- ✓ **Selected as one of the top 10 cited articles section (in July 2010) at Science Direct in Journal of Environmental Management.**
- ✓ **Selected as one of the top hottest articles (ranked 8 in July–September 2009) at Science Direct in field of Environmental Science**
- ✓ **Selected as one of the top hottest articles (ranked 19 in October – December 2009) at Science Direct in field of Environmental Science**
- ✓ **Selected as one of the top hottest articles (ranked 20 in Jan–March 2010) at Science Direct in field of Environmental Science**
- ✓ **Selected as one of the top hottest articles (ranked 12 in October 2009–September 2010 Academic year) at Science Direct in field of Environmental Science**
- ✓ **Selected as one of the top hottest articles (ranked 24 in October 2009–September 2010 Academic year) at Science Direct in field of Energy**
- ✓ **Selected as one of the top hottest articles (ranked 11 in July–September 2009) at Science Direct in field of Energy**

18. J.M. Valente Nabais, J.A. Gomes, **Suhas**, P.J.M. Carrott, M.M.L. Ribeiro Carrott, C. Laginhas, S. Roman, "Phenol removal onto novel activated carbons made from lignocellulosic precursors: Influence of surface properties", ***Journal of Hazardous Materials,*** 167, 904-910 (2009). [Impact factor-7.650]
19. V. K. Gupta, P.J.M. Carrott, M.M.L. Ribeiro Carrott and **Suhas, "**Low cost adsorbents: Growing approach to wastewater treatment – A review", ***Critical Reviews in Environmental Science & Technology***, 39, 783-842 (2009). [Impact factor-5.980]
    - ✓ **The second ranked journal in Environmental Sciences!**
    - ✓ **One of the most cited articles in 2007-2009**
20. P.J.M. Carrott, M.M.L. Ribeiro Carrott and **Suhas, "**Comparison of the Dubinin-Radushkevich and Quenched Solid Density Functional Theory Approaches for the Characterisation of Narrow Microporosity in Activated Carbons Obtained by Chemical Activation with KOH or NaOH of Kraft and Hydrolytic Lignins", ***Carbon,*** 48, 4162-4169 (2010). [**Impact factor-** 7.466].

21. **Suhas** "Environmental Pollutants: New Emerging Challenges" invited editorial in Research Journal of Chemistry and Environment, Vol 15(1) March 2011. [Impact factor- NA]
22. Suhas, Randhir Singh and Monika Chaudhary, "Microporous activated carbon from Cajanus cajan using physical activation" in proceedings of Recent Advances in Surface Science, RASS 2013, 167-168 (2013), ISBN 978-93-82338-36-9
23. V. K. Gupta, N. Atar, M. L. Yola, C. Darcan, Önder İdil, Z. Üstündağ and **Suhas**, "Biosynthesis of silver nanoparticles using chitosan immobilized *Bacillus cereus*: Nanocatalytic studies", **Journal of Molecular Liquids** 188, 81–88 (2013) [Impact factor -4.561]
24. Randhir Singh, Ashok Kumar Gupta, D R Khanna, Udit Mohan, **Suhas**, Prem Singh, Rakesh Bhutiani, and Varun Tyagi, "Physicochemical Investigation and Quality Assessment of Groundwater (Hand-Pump) of Baghpat District, Uttar Pradesh, India" **International Journal of Researches in Biosciences, Agriculture & Technology**, 2 (2), 775-783 (2014) [Impact factor -NA]
25. Udit Mohan, Randhir Singh, Prem Singh, **Suhas**, Poonam Kashyap Prusty, Varun Tyagi and Sweety, "Determination of Zn, Cd, Pb and Cu metals in ground Water of District Hapur, Uttar Pradesh (India) by Anodic Stripping Voltammetric Technique" Environment Conservation Journal, 15 (1), 195-199 (2014) [Impact factor -NA]
26. V.K. Gupta, **Suhas**, A. Nayak, S. Agarwal, M. Chaudhary and I. Tyagi, "Removal of Ni (II) ions from water using scrap tire", **Journal of Molecular Liquids** 190, 215–222 (2014). [Impact factor -4.561]
27. **Suhas**, R. Singh, M. Chaudhary and S. Kushwaha, "Removal of basic dye Safranin O using demineralised lignin", International Journal of Science, Technology & Management, 4, 01, 166-170 (2015) (ISSN: 2394-1537) [Impact factor -NA]
28. V. K. Gupta, **Suhas**, I. Tyagi, S. Agarwal, R. Singh, M. Chaudhary, A. Harit and S. Kushwaha, **"**Column operation studies for the removal of dyes and phenols using a low cost adsorbent", **Global Journal of Environmental Science and Management,** 2 (1), 1-10, 2016. (ISSN: 2383-3572) (January-March) [Impact factor -NA].
29. **Suhas**, V.K. Gupta, P.J.M. Carrott, R. Singh, M. Chaudhary and S. Kushwaha, "Cellulose: A review as natural, modified and activated carbon adsorbent" Bioresource Technology, **2016, 216, 1066-1076. [ISSN: 0960-8524, Impact factor – 6.669] (September 2016).**

30. Suhas, R. Singh and A. Harit, “Effect of chlorine substitution on the removal of phenols by activated carbon” Environment Conservation Journal, 2017, 1 (1&2), 163-172. [ISSN: 2278-5124, Impact factor NA] (May-June 2017).
31. Suhas, P.J.M. Carrott, M.M.L. Ribeiro Carrott, R. Singh, L. P. Singh and M. Chaudhary An innovative approach to develop microporous activated carbons in oxidising atmosphere, **Journal of Cleaner Production**, 2017, 156, 549-555[SCI/Scopus indexed] [ISSN: 0959-6526, Impact factor -6.395] (10 July 2017).
32. Alka Harit, Suhas, Prashant Tevatia and Randhir Singh, “Adsorption studies of lead and crystal violet onto modified activated carbon” Journal of Energy Research and Environmental Technology, 2017, 4, 229-233. [ISSN: 2394-1561, Impact factor NA] (July September 2017).
33. Shwetank, Suhas, Jitendra Chaudhary, and Sarita Kushwaha, “Role of Fuzzy logic in drinking ground water assessment” Bharatiya Vaigyanik evam Audyogik Anusandhan Patrika, page 38-42, Vol.25(1&2) [June-December 2017] Impact factor NA]
34. Shwetank, Suhas and Jitendra Chaudhary, “Estimation of groundwater contamination using fuzzy logic: A case study of Haridwar, India” Groundwater for Sustainable Development, Volume 8, April 2019, Pages 644-653 Impact factor NA]
35. Shwetank,, Suhas, Chaudhary, J.K., A Comparative Study of Fuzzy Logic and WQI for Groundwater Quality Assessment, Procedia Computer Science, 2020, 171, pp. 1194-1203
36. Kushwaha S., Suhas, Chaudhary S. and Chaudhary M. ‘’Determination of Biosorption Behavior and Removal of Cationic Dyes by Phyllanthus Emblica Fruit Stone’’ International Journal of Advanced Science andTechnology, 2020. 29, 13863 – 13875.
37. Suhas, V. K. Gupta, L. P. Singh M. Chaudhary and S. Kushwaha A novel approach to develop activated carbon by an ingenious hydrothermal treatment methodology using *Phyllanthus emblica* fruit stone, Journal of Cleaner Production, 2021

- **The total number of citations of papers as available on Scopus/Google Scholar is over 6500/8800 (as on April 2021).**

- **The total impact factor for the papers in journals is over 50 (source ISI Web of Knowledge).**

- **h Index is 19 as available on Scopus (as on April 2021).**

Conferences/Scientific Meetings

1. Presented a paper "फजी प्रतिरूप द्वारा पेय भूजल गुणवत्ता का निर्धारण" at conference भारतीय भाषाओँ में प्रथम अंतराष्ट्रीय विज्ञान संगोष्ठी held at Department of Computer Applications, National Institute of Technology, Kurukshetra on 22 August, 2017.
2. Presented a poster Anodic Stripping Voltammetric Determination of Lead in Tap Water of Roorkee (India) at the International Conference on Advances in Science Engineering and Technology - 2016 (ICASET 2016) held at Hotel 'The URMI' Haridwar, Uttarakhand on 29-30 January, 2016
3. Participated in the national conference on Recent Advances in Biological and Pharmaceutical Sciences (RABPS-2015) held at Indian Drug Pharmaceutical Ltd. (IDPL), Rishikesh, Uttarakhand on 05 December, 2015
4. Participated in पांचवी राष्ट्रीय जल संगोष्ठी, held at National Institute of Hydrology, Roorkee, India on 19- 20, November, 2015.
5. Participated in the Workshop & Hands on Training on "Synthesis and Characterization of Thin Films" held at Department of Physics, Gurukula Kangri Vishwavidyalaya, Haridwar on 31st March -1st April, 2015
6. Paper "Physically activated microporous carbon from lignin for the preliminary studies of the removal of methylene blue dye" accepted for poster presentation in National Conference on Recent Advances in Biosciences & Drug Discovery RABDD 2014, to be held at Gurukula Kangri Vishwavidyalaya, Haridwar, India on 3-4 March, 2014.
7. Presented a paper at National Seminar on Economic Upgradation: Environmental Degradation held on 24-25 january, 2014 at the Omkarananda Institute of Management and Technology, Rishikesh, India.
8. Participated in National Conference on Emerging Trends in Engineering & Sciences held at Gurukul Kangri Vishwavidyalaya, Haridwar, India 9-10 November, 2013.
9. Attended 3rd International Conference of Ecotoxocology & Environmental Sciences (ICEES 2011) held on 28-30 November, 2011 at Panaji, Goa, India
10. Attended World Congress for Man and Nature "Global Climate Change and Biodiversity Conversation" (WCMANU-2011) held on 11-13 November, 2011 at Department of Zoology and Environmental Science, Gurukula Kangri Vishwavidyalaya, Haridwar, India.
11. Poster presentation "Preparação, caracterização e estudo de aplicações para materiais de carbono preparados a partir de precursores naturais" at Jornadas

2010 do Departamento de Quimica at University of Évora, Évora, Portugal on 25 -26 March, 2010

12. Presentation “Adsorção e Novos Materiais de Carbonopara a Redução de Emissões e a Captura de Dióxido de Carbono” at Jornadas 2010 do Departamento de Quimica at University of Évora, Évora, Portugal on 25 -26 March, 2010
13. “Effect of metal additives on the microporosity of activated carbons from lignin by physical and chemical activation”, poster presentation at 8th International Symposium on the Characterisation of Porous Solids held at Edinburg, Scotland on 10-13 June, 2008.
14. Attended seminar “Energy Crops, Biomass and Biofuels” organized by University of Evora, Evora, Portugal on 6-7 December, 2007.
15. Poster presentation “Reactivity of cork and lignin for the production of activated carbons” at Materials 2007 held at Porto, Portugal on 1-4 April, 2007.
16. Poster presentation “Utilization of lignins as activated carbons/Physically activated carbons from lignins: A comparative study” at XXXI Iberian Adsorption Meeting, held at Tarragona, Spain on 27-29 September, 2006.
17. Presented a paper “Comparison of Activated Carbons Prepared from Lignin from Different Sources” in conference CARBON 2006, held at Aberdeen, Scotland on 16-21 July, 2006.
18. Attended a short Course on Materials Science & Technology: Synthesis and Characterisation of Designed Porous Materials”. Course coordinated by Professor Klaus K. Unger (Johannes Gutenberg University, Mainz, Germany) at university of Évora from 20 to 21 March, 2006
19. Participated in the 22nd Conference of Indian Council of Chemists and UGC sponsored one day symposium on "Thrust Areas in Chemistry" organized by Department of Chemistry, Indian Institute of Technology Roorkee, Roorkee on 17-19th October 2003.
20. Participated in National Workshop on "High Resolution NMR Spectroscopy of Polymers" held at Indian Institute of Technology Delhi, Delhi on 1-2nd December 2001.
21. Participated and presented the annual report of the project “Treatment and Utilization of Liquid and Solid Waste Materials Generated in Chrome Tanneries, National Fertilizers and Steel Plants” in Review Meeting of Ministry of Environment & Forests (Govt. of India) held on 28-29th September 2001 at NBRI, Lucknow (India).

Memberships

1. Member of Évora Chemistry Centre, Evora, Portugal.
2. Life Member of the “Indian Science Congress Association”.
3. Life Member of “Indian Water Works Association”
4. Life Member of “Materials Research Society of India”
5. Life Member of “Indian Association for Environmental Management”
6. Life Member of “Indian Water Resources Society”
7. Life Member of “Indian Carbon Society”
8. Fellow, International Congress of Chemistry and Environment.
9. Member of editorial board of “Research Journal of Chemistry and Environment”
10. Life Member “Indian Society for Surface Science and Technology”

11. Member of review board of Scientific Journals International
12. Life member of Indian Society for Surface Science and Technology
13. Member of International Association of Hydrological Sciences
14. Life Member Indian Association of Hydrologists
15. Life Member of “Association of Chemistry Teachers”, India
16. Member of European Water Resources Association
17. Life Member Indian Association of Hydrologists
18. Member of editorial board of “International Journal of Nutrition and Food Management for Patients”

Peer Reviewer for International Journals:

1. Environmental Science & Technology (ACS)
2. Journal of Hazardous Materials (Elsevier)
3. Journal of Environmental Protection Science
4. Chemosphere (Elsevier)
5. Environmental Chemistry (CSIRO)
6. Energy & Fuels (ACS)
7. Environmental Science and Pollution Research (Elsevier)
8. Indian Journal of Chemical Technology
9. Science Journal of Pure & Applied Chemistry
10. Environmental Science and Pollution Research (Springer)
11. The Chemical Educator
12. Adsorption Science and Technology
13. Bioresource Technology
14. Carbohydrate Polymers
15. Cellulose
16. Scientia Iranica
17. Science of the total environment

Language Skills:

1. English
2. Hindi
3. Portuguese (Basic level)