

Curriculum Vitae



Dr Kaushik Nath *M.Tech., Ph.D*

Professor & Head

Chemical Engineering Department
G H Patel College of Engineering & Technology
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Vallabh Vidyanagar, Gujarat, India.

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Date of Birth:

21st March, 1972

Education:

Ph.D. (Biochemical Engineering), I.I.T, Kharagpur, 2006.
M. Tech. (Chemical Engineering.), Calcutta University, 1997.
B. Tech. (Chemical Engineering.), Calcutta University, 1995.
B.Sc. (Chemistry Honors), Calcutta University, 1992.

Work Experience:

Professor & Head, Dept of Chemical Engineering, G H Patel College of Engineering & Technology, Oct 2008 – Present.

Head, Dept of Chemical Engineering, G H Patel College of Engineering & Technology, June 2007 – Present.

Assistant Professor, Dept. of Chemical Engineering, G H Patel College of Engineering. & Technology, July 2003 – September 2008.

QIP Research Scholar, (On deputation) Dept. of Biotechnology, I.I.T, Kharagpur. July 2002 – July 2005.

Senior Lecturer, Dept. of Chemical Engineering, G H Patel College of Engineering. & Technology, August 2002 – June 2003

Lecturer, Dept. of Chemical Engineering, G H Patel College of Engineering.& Technology, August 1997 - August 2002.

Awards and Honors:

- **Innovative Potential Projects Award – Doctoral Level** (Indian National Academy of Engineering, INAE), 2007.
- Received travel grant from **United Nations Industrial Development Organizations** and **International Centre for Hydrogen Energy Technologies** (UNIDO-ICHET) for delivering invited lecture at the plenary session of the International Workshop at IIT Kharagpur during 7-9 February.
- Received financial grant from **British Council, India** and was invited to participate **UK-India Young Scientist Networking Conference** on 'Low Carbon Energy Future' to present his research work on Biological Hydrogen Production at Chennai during 23-24 March 2009.
- Recipient of **National Merit Certificate and Prize** in Secondary Examination, W B B S E, 1987.
- **Rank Holder** in Secondary Examination WBBSE, 1987.
- Recipient of **National Merit Certificate and Prize** in Higher Secondary Examination, 1989.

Number of Research Publications: Total: 52; Journal: 26 (Annexure-I)
(12 International)

Conference Proceedings: 22
(Seven International)
Books and others: 4

Sponsored Research Projects (ongoing):

Sponsoring Agency	Project title	Reference number	Project Cost	Starting date
CSIR	Reclamation of Phenolic Wastewater by Sorption on to PAC and Bio-regeneration of the Spent Carbon	File no: 22(0963)/07	Rs. 5.72 Lakhs	01/10/2010

Number of Ongoing Ph.D Guidance: 02

Subjects of Interest:

Biochemical Engineering.
Membrane separation
Waste water treatment.

Professional Affiliations:

Life member: **Indian Institute of Chemical Engineers (IICChE)**
LM: 16963

Life Member: **Indian Society for Technical Education (ISTE)**
LM: 53063

Life Member: **The Institution of Engineers (India)**
M-140773-7

Member, Executive committee, **The Institution of Engineers (India)**,
Vallabh Vidyanagar Local Center

Reviewers of Journals:

- i) **Journal of Biobased material and Bioenergy.**
- ii) **International Journal of Hydrogen Energy**
- iii) **Industrial Engineering & Chemistry Research.**
- iv) **Desalination.**
- v) **Chemical Engineering Journal**
- vi) **Journal of Scientific and industrial research.**

Invited Lectures Delivered:

1. Delivered invited Lecture on Hybrid Reactor System at the Plenary session of the International Workshop on Biohydrogen Production Technologies , IWBT 2008, Feb 7-9, 2008, IIT, Kharagpur.
2. Delivered lecture before the senior plant personnel of Transpek Industry Limited, Baroda under Industry-Institute-Interaction Programme during 8-9 August, 2008.
3. Delivered lecture before the plant personnel of Transpek Industry Limited, Baroda under Industry-Institute-Interaction Programme during 5-6 Septembert, 2008.
4. Delivered a lecture on Biological Hydrogen Production at the UK-India Young Scientist Networking Conference on 'Low Carbon Energy Future', Organized by British Council, India, at Chennai during 23-34 March 2009.
5. Delivered invited lecture on "Membrane Reactor-concept, applications" at the State level Symposium on "Novel Separation Process" organized by the Department of Chemical Engineering, Sarvajanic College of Engineering & Technology (SCET), Surat, on 13th October, 2011.

Summer / Winter Schools and Workshops participated

- Three week Short Term course on "**Hydrocarbon Engineering**" sponsored by AICTE, at Indian Institute of Technology, Roorkee (Dept. of Chemical Engineering)[Formerly University of Roorkee] (January 3 to January 22,2000)
- Two-week summer school on "**Treatment Technologies for Waste Management and Bio-energy**" sponsored by AICTE & ISTE, at Maulana Azad College of Technology (presently N.I.T), Bhopal. (June 5 to June 17,2000)

- Three day short course on “**Applications of Membrane for Biotechnology, Food Processing and Waste Water Treatment**”, Dept. of Biochemical Engineering and Biotechnology, I.I.T., Delhi April 5-7, 2001.
- **Workshop on Advanced Separation Processes**, organized by Dept. of Chemical Engineering, Biotechnology and Cryogenic Engineering center, I.I.T., Kharagpur, (July 30 to August 3,2002) in collaboration with Kentucky University, USA.
- Five day short term training programme on “**Strategy and Art of Reinventing Excellence in Education**”, ISTE Chapter ADIT and H M Patel Career Development Center, Vallabh Vidyanagar, Gujarat, February 12 to February 16, 2007.

Others:

- Member, (as subject expert) Board of Studies of Chemical Engineering, The M S University of Baroda, Vadodara.
- Worked as Chairman on the panel of experts for selection of JRF for DST and CSIR sponsored research projects in Central Salt and Marine Chemicals Research Institute (CSMCRI) – A CSIR Organization, Bhavnagar, Gujarat.
- Worked as an Expert on the Panel for interviews for recruitment of Faculty at The M S University, Baroda; Sardarkrushinagar Dantiwada Agricultural University, Banaskantha, Gujarat; Institute of Science and Technology for Advanced Research, Vallabh Vidya Nagar, and for Project Scientist at Sardar Patel Renewable Energy Research Institute, (SPRERI) Vallabh Vidyanagar, Gujarat.
- Nominated as a member of the selection committee for selection of Project Assistant for UGC sponsored research programme in the P. G Department of Materials Science, Sardar Patel University.

- Acted as External Examiner in UG, PG, & Ph.D in Sardar Patel University The M S University of Baroda, Gujarat Technological University, Gandhinagar and Veer Narmad South Gujarat University, Surat.
- Recognized Ph.D Guide, in Chemical Engineering, at Sardar Patel University, Vallabh Vidyanagar. & Gujarat Technological University.
- Biographical Profile Selected for inclusion in the 2010 edition of MARQUIS Who's Who in the world.
- Organizing Chair of the National Symposium on Green Chemistry & Technology for Sustainable Development”, NSGC 2012, Feb 24-25, 2012.
- Organizing Chair of the National Conference on Biochemical Engineering: Present Scenario and Future Perspective”, NCBE 2010, March 12-13, 2010.
- Organizing Chair of the National Symposium on Advances in “Separation & Purification Science and Technology”, NSST 2011, Feb 4-5, 2011.
- Acted as I/C Chairman, Chemical Engineering Board of Studies, Sardar Patel University.
- Member, National Scientific Committee, International Workshop on Biohydrogen Production Technology (IWBT 2008), Feb 7-9, 2008, I I T, Kharagpur.
- Professor in Charge, College Library (Oct, 2005 – Oct, 2007)
- Chief Editor, GCET VOICE (Annual Magazine) and GCET Talk (Quarterly News letter) (2005-2010)
- Organizing Secretary, Imaze 2008 (Annual Technical Fest), GCET.
- Joint coordinator for One day Workshop on “Research Methodologies in Engineering Education” 27th April, 2006.
- Member, Apex Organizing Committee, “Brahmastra” : The Annual Technical Meet organized by BVM, GCET and ADIT during April 7-9, 2009

Annexure-I

Research Papers/ Publications During Last Five Years

(In reverse chronology)

International Journals	National Journals	International Conference	National conference	Books and others	Total
12	14	08	12	06	52

Journals

2012

1. Tejal M Patel, Harsh Chheda, Abhisek Baheti, Punit Patel and **Kaushik Nath**, Comparative performance of flat sheet and spiral wound modules in the nanofiltration of reactive dye solution. *Env Sci & Pollution Research*, Springer, DOI:10.1007/s11356-012-0810-7 , 2012 (In press)

2011

2. **Kaushik Nath** Debabrata Das, Modelling and optimization of fermentative hydrogen production, *Bioresource Technology* 102, 8569-8581, 2011.
3. **Kaushik Nath**, Mathurkumar S Bhakhar and Suresh Panchani, Bioregeneration of Spent Activated Carbon: Effect of Physico-Chemical Parameters, *J. Sci. Ind. Res* vol 70, 487-492, 2011

2010

4. **Kaushik Nath** and Mathurkumar S Bhakhar, Microbial regeneration of Spent Activated Carbon Dispersed with Organic Contaminants: Mechanism, Efficiency and Kinetic models, *Env Sci & Pollution Research*, Springer, 18:534–546, 2011.

2009

5. **Kaushik Nath** Debabrata Das, Effect of Light Intensity and Initial pH During Hydrogen Production by an Integrated Dark and Photo-fermentation Process, *Int J Hydrogen Energy* 34, 7497- 7501, 2009. [**08 Citation**]

2008

6. **Kaushik Nath**, Mehul Thummar, Mahesh Vaghela, and Pranav Jani, Sorption of phenol from aqueous solution using activated carbon prepared

from Manilkara Zapota seed. *Ind. J Chem Tech.* vol 15, November, 533-540, 2008 .

7. **Kaushik Nath**, Manoj Muthukumar, Anish Kumar and Debabrata Das: Kinetics of Two Stage Fermentation Process for the Production of Hydrogen". *Int. J Hydrogen Energy*, 33, 1195-1203, 2008. **[37 Citation]**

2007

8. **Kaushik Nath**, Methane hydrate: the little known energy resource of the future. *J Surface Science and Technology*, vol 23 (1-2):59 -72, 2007.
9. **Kaushik Nath** and Debabrata Das, Production and storage of hydrogen: present scenario and future perspective. *J. Scientific and Industrial Research*, vol. 66 (9), 701-710, 2007.
10. **Kaushik Nath**, J P Gor, P N Shah, K Modi, Physicochemical parameters, isotherms, sorption kinetics and column operations for adsorption of copper (II) from waste water using fly ash. *J Scientific and Industrial Research*, vol. 66, 170-177, 2007.

2006

11. **Kaushik Nath**, Anish Kumar and Debabrata Das, Effect of some environmental parameters on fermentative hydrogen production by *Enterobacter cloacae* DM11, *Canadian Journal of Microbiology* 52, 525-532, 2006. **[15 Citation]**
12. **Kaushik Nath** and Debabrata Das, Amelioration of biohydrogen production by a two-stage fermentation process. *Industrial Biotechnology*, (Gen Publishing Inc.) vol. 2 (March) No.1, 44-47, 2006.
13. Biswajit Mandal, **Kaushik Nath** and Debabrata Das, Improvement of biohydrogen production under decreased partial pressure of H₂ by *Enterobacter cloacae*, *Biotechnology Letters*, 28, 831-835, 2006, **[26 Citation]**
14. **Kaushik Nath**, G Chittibabu, and Debabrata Das, Feasibility studies on the fermentative hydrogen production by recombinant *Escherichia coli* BL-21. *Process Biochemistry*, Vol. 41(3), 682-688, 2006. **[30 Citation]**
15. D Das, T Dutta, **K Nath**, S Kotay, A K Das, T N Veziroglu. Role of Fe-hydrogenase in biological hydrogen production. *Current Science* vol. 90, No. 12, 1627-1637, 2006. **[18 Citation]**

2005

16. **Kaushik Nath**, Anish Kumar and Debabrata Das, Hydrogen production by *Rhodobacter sphaeroides* strain OU 001 using spent media of *Enterobacter cloacae* DM11. *Applied Microbiol. and Biotechnol.* 68 (4), 533-541, 2005. **[37 Citation]**
17. D. Patel, A Sharma, K. Shroff and **K. Nath**, A Study on treatability of Dairy Wastewater in an Anaerobic Down flow Fixed Film Reactor. *Ind. J Env. Protection*, 26(1): 54-60, 2006.
18. **Kaushik Nath** and Debabrata Das, Biohydrogen production: major bottlenecks for commercialization. *Bioenergy News*, 2005.

2004

19. **Kaushik Nath** and Debabrata Das, Improvement of fermentative hydrogen production – various approaches, *Applied Microbiology and Biotechnology*, vol. 65, 520-529, 2004. **[189 Citation]**
20. **Kaushik Nath** and Debabrata Das, Biohydrogen production as a potential energy resource – Present state-of-art, *Journal of Scientific and Industrial Research*, vol.63, 729-738, 2004. **[10 Citation]**

2003

21. Kaushik Nath and Debabrata Das, Hydrogen from Biomass, *Current Science*, Vol. 85, No. 3: 101-107, 2003. **[69 Citation]**.
22. **Kaushik Nath** and Debabrata Das, Energy and economic analysis of a fermentative hydrogen production process, *Bioenergy News*, Vol. 7, No. 2: 15-19, 2003.
23. Dhara Patel, Kinshuk Shroff and **Kaushik Nath**, Treatment of dairy effluent using suspended growth technique in an aerated batch reactor. *Indian Journal of Environmental Protection*, 23(4): 419 -421, 2003.

2002

24. **Kaushik Nath**, A survey on biodegradation of Phenol from wastewater. *Indian Journal of Environmental Protection*, 22(5): 512 -517, 2002.
25. **Kaushik Nath**, Dhara Patel and Anupriya Sharma, Treatment of Dairy effluent using Suspended and attached Growth Techniques - A Comparative Study. *Asian Journal of Biotechnology, Microbiology and Environmental Science*, Vol.4, No(3): 71-75,2002.

2001

26. **Kaushik Nath**, Hemalata Lokhande, Ravindra Singh and Pinal Joshi, Adsorptive Dephenolation of Waste water using Fly ash and Low grade Coals. *Journal of Surface Science and Technology*. Vol. 17, No 1-2, 135-140, 2001

Books & Book Chapters

1. **Kaushik Nath**, "Membrane Separation Processes ", Prentice Hall of India (2008), ISBN: 978-81-203-3532-5, pg 322. (First Reprint: 2011).
2. **Kaushik Nath** and Debabrata Das, Photoproduction of hydrogen using phototrophic purple non-sulfur (PNS) bacteria in column bioreactor, in Photo/electrochemistry and Photobiology in environment, energy and fuel, Research Signpost, 2005: 43-59. (ISBN: 81-308-0000-4).
3. **Kaushik Nath** and M S Bhakhar, Membrane reactors: concepts, applications and prospects, in *Membrane Technologies and Applications: Ed. Mohanty and Purkait*, CRC Press (Taylor and Francis, Boca Raton, 2012, ISBN: 978-1-4398-0526-8 (Hard Back), pp.419-444.

Conference proceedings

2009

1. Manish Lakhota, Deepak L, Priyal Patel and Kaushik Nath, Thermodynamic and kinetic analysis of adsorption of phenol onto the activated carbon prepared from *Manilkara zapota* seeds. In Proc. Indian Chemical Engineering Congress (CHEMCON) 27-30 December, 2009, Visakhapatnam, India

2008

2. Mehul Thummar, Mahesh Vaghela, Pranav Jani, and **Kaushik Nath** Adsorptive dephenolation using activated prepared from Manilkara Zapota seed with chemical activation . In Proc. Indian Chemical Engineering Congress (CHEMCON) 27-30 December, 2008, Chandigarh, India
3. **Kaushik Nath** and Debabrata Das, Effect of light intensity and initial pH during hydrogen production by an integrated dark and photofermentation process. International Workshop on Biohydrogen Production Technologies, IWBT 2008, Feb 7-9, 2008, IIT, Kharagpur.

2006

4. **Kaushik Nath** and Debabrata Das, Some considerations of process improvement in anaerobic fermentation for higher yield of hydrogen. Indian Chemical Engineering Congress 2006, Ankleswar, 27-30 December 2006.
5. D Nikhil Rao, Rajan Patel, Hardik Gandhi, Ravi Kundalia and **Kaushik Nath**, Deodorization of Condensate Water by Adsorption onto Activated Carbon. Indian Chemical Engineering Congress 2006, Ankleswar, 27-30 December 2006.

2005

6. **Kaushik Nath** and Debabrata Das, Studies on Selected Process Parameters and Kinetics of Two-stage Fermentation for Biohydrogen Production. Indian Chemical Engineering Congress 2005, IIT, Delhi, 14-17 December 2005.
7. **Kaushik Nath** and Debabrata Das, The synergy of two-stage fermentation process: an approach towards amelioration of biohydrogen production. International Hydrogen Energy Congress and Exhibition. Istanbul-Turkey. 13-15 July, 2005
8. **Kaushik Nath**, G. Chittibabu and Debabrata Das, Continuous hydrogen production by immobilized *Enterobacter cloacae* DM11 using cane molasses as feedstock. International Hydrogen Energy Congress and Exhibition. Istanbul-Turkey. 13-15 July, 2005.
9. **Kaushik Nath** and Debabrata Das, Potentials of anaerobic fermentation as a route to biological hydrogen production. INAE conference on Road map to Hydrogen, Hyderabad, 4-5 March, 2005.

2004

10. **Kaushik Nath**, Anish Kumar and Debabrata Das Studies on fermentative hydrogen production process by *Enterobacter cloacae* IIT-DM11 and evaluation of thermodynamic parameters. In Proceedings of Indian Chemical Engineering Congress CHEMCON 2004, Mumbai, Dec 28-Dec 30.
11. **Kaushik Nath** and Debabrata Das, Production of biohydrogen using *Enterobacter cloacae* DM11 with enhanced yield and improved energy recovery, In proceedings of 15th World Hydrogen Energy Conference, Yokohama, Japan, June 27-July 2, 2004.

12. **Kaushik Nath** and Debabrata Das, Hydrogen by dark fermentation – current perspective. In proceedings of 15th World Hydrogen Energy Conference, Yokohama, Japan, June 27-July 2, 2004.

2003

13. **Kaushik Nath** and Debabrata Das, Studies on the effect of physico-chemical parameters on hydrogen production using free-suspended and immobilized whole cells of *Enterobacter cloacae* DM11, In proceedings of Indian Chemical Engineering Congress, CHEMCON-2003, 19-22 December, Bhubaneswar, India.
14. **K. Nath**, N. Roy, L. Mukherjee and D. Das, Biohydrogenation using *Enterobacter cloacae* DM11 and a comparative energy analysis with biomethanation. In Proc. Ener-Env2003, International Conference on Energy and Environment, Changsa, China, Energy and Environment – a world of challenges and opportunities, Science press, New York, pp.273-280 2003.
15. S. Saha, N. Roy, **K. Nath** and D. Das, Biohydrogenation of industrial effluents using *Enterobacter cloacae* DM11, in proc. HYPOTHESIS V, Hydrogen Power Theoretical and Engineering Solutions International Symposium, 7-10 September 2003, Porto Conte, Italy.

2002

16. **Kaushik Nath**, Killol karia and Hardik Valera. Biokinetic Modelling of Phenol Degradation Using Free Cells of Yeast in a Packed Bed reactor. in proceedings of BIOHORIZON 2002, BE 03 p.p: 139-141, 1-2 March, 2002, I.I.T., Delhi.
17. Dhara Patel and **Kaushik Nath**, Treatability Study of Dairy effluent using Anaerobic Fixed Film reactor, in proceedings, BIOHORIZON 2002, BE04, p.p 113-117, 1-2 March, 2002, I.I.T., Delhi.

2001

18. **Kaushik Nath**, Nishit Patel, Parvez Musani and Nilay Shastri: Biodephenolation of waste water using yeast cells in a bench scale packed bed reactor, Proc. ABN122, International Conference of Industrial Pollution Control Technology, ICIPACT 2001, JNTU, Hyderabad, 8-11 December 2001.
19. **K. Nath**, H. Y. Lokhanda, J. Tailor and M. Patel: A Comparative Study on dephenolization of wastewater by emulsion membrane and through adsorption on fly ash. Proc. Indian Chemical Engineering Congress, CHEMCON-2001, 19-22 Dec 2001, CLRI, Chennai.
20. **Kaushik Nath**, Nishit patel, Parvez Musani and Nilay Shastri, Simulation of Product Inhibition Kinetics Model of ethanol Fermentation with Free Cells of *Saccharomyces cerevisiae*. BIOHORIZON2001, Proceeding BE-

01, 23-24 Feb, 2001, Bioengineers and Technologists Association (BETA) I.I.T., Delhi.

- 21. Kaushik Nath** and Dharmendra Mandaliya: Modelling of a trans-membrane competitive facilitated transport with two permeants and one carrier. Proc. 49 Indian Chemical Engineering Congress, CHEMCON-2001, 19-22 Dec 2001, CLRI, Chennai.

2000

- 22. Kaushik Nath**, Biohydrometallurgical Beneficiation of Low grade Ores, in Proceedings Indian Chemical Engineering Congress, CHEMCON-2000, Indian Institute of Chemical Engineers, Calcutta, 18-21 Dec, Vol-II, p.p:73-76, 2000.

- 23.** Dhara Patel, Kinshuk shroff anupriya Sharma, Divyesh Jha and **Kaushik Nath**. A Case Study on Treatability of dairy waste effluent Using *Saccharomyces cerevisiae* in aerated batchreactor. Proceeding. National Seminar on Microbial technology, mt2001, 1-2 June, 2001, GRD College of Science, Coimbatore.

Others

- 24.** Impacts of biotechnology on society – a brief appraisal. **Kaushik Nath** and Debabrata Das, Commemorative volume of National Science Day celebration, 2004, Nehru Museum of Science and Technology, I.I.T ,Kharagpur