

Curriculum Vitae

Name: *Sreekrishnan, T.R.*

Address : *Department of Biochemical Engineering and Biotechnology
Indian Institute of Technology, Delhi
Hauz Khas, New Delhi - 110 016
India*

Date of Birth : *15.05.1961
(Fifteenth May Nineteen Sixtyone)*

Nationality : *Indian*

Academic Qualifications

Ph.D :

*1985 - 1990
Biochemical Engineering Research Centre
Indian Institute of Technology, Delhi
Thesis title:
" Operational Characteristics of Fluidized-Bed Reactors for Anaerobic Process "*

M.Tech :

*1983 - 1985
Biochemical Engineering Research Centre
Indian Institute of Technology, Delhi
Discipline : Biochemical Engineering and Biotechnology
Cumulative Grade Point Average (out of 10 point scale) : 9.62*

B.Sc (Engineering) :

*1978 - 1983
University of Cochin
Discipline : Chemical Engineering
Overall Marks Secured : 85.6 %
Overall Classification : First Class with Honours*

Positions Held

October, 2006 to date:

*Professor
Department of Biochemical Engineering and Biotechnology
Indian Institute of Tvechnology, Delhi
Hauz Khas, New Delhi - 110 016*

January, 2000 to September, 2006:

Associate Professor

Department of Biochemical Engineering and Biotechnology

Indian Institute of Technology, Delhi

Hauz Khas, New Delhi - 110 016

India

February, 1995 to January, 2000:

Assistant Professor

Department of Biochemical Engineering and Biotechnology

Indian Institute of Technology, Delhi

Hauz Khas, New Delhi - 110 016

India.

February, 1992 to February, 1995 :

Post Doctoral Scientist

INRS-Eau

Institut National de la Recherche Scientifique

Complexe Scientifique

2700, rue Eistein

Sainte - Foy (Quebec) G1V 4C7

Canada

December, 1990 to January, 1992 :

Senior Technical Officer

McDowell & Co. Ltd.

Technical Centre

Sherrif Chambers

14, Cunningham Road

Bangalore - 560 052

India

February, 1990 to November, 1990 :

Senior Scientific Officer - II

Biochemical Engineering Research Centre

Indian Institute of Technology, Delhi

Hauz Khas, New Delhi - 110 016

India

Scholarships / Distinctions

Awarded the Post-Doctoral Fellowship of INRS, Quebec, Canada for 1992 - 1993

Awarded Senior Research Fellowship of IIT, Delhi during the course of the Ph.D

Programme

Ranked overall First in the Masters' Programme

Affiliations in Professional Bodies

Life member, Indian Institute of Chemical Engineers

Academic/professional interactions

- *Associate Editor, "Journal of Hazardous, Toxic and Radioactive Waste", American Society of Civil Engineers (ASCE).*
- *Member, Editorial Board, "Environmental Technology".*
- *Visiting faculty at INRS-Eau, Canada during May, 1996 to July 1996.*
- *Advisor on biomethanation technology to the Tata Energy Research Institute (TERI)*
- *Member, Board of Studies, TERI School of Advanced Studies*
- *Member, Board of Studies (Engineering), University of Kerala.*
- *Member, Local Area Environment Committee for Delhi (LAEC Delhi) constituted by the Supreme Court Monitoring Committee(SCMC)*

Publications

Papers presented in Conferences / Symposia:

Sreekrishnan, T.R., Ghosh, P. and Ramachandran, K.B. (1988) "Biofilm formation in a fluidized-bed anaerobic reactor". *Symposium on Recent Advances in Bioprocess Engineering, New Delhi, India, Dec 20-21.*

Sreekrishnan, T.R., Ghosh, P. and Ramachandran, K.B. (1989) "Fluidized-bed anaerobic reactor for waste treatment". *Seminar on Recent Advances in Biochemical Engineering, Varanasi, India, Feb 16-18.*

Sreekrishnan, T.R., Ramachandran, K.B. and Ghosh, P. (1989) " Studies on the start-up of a fluidized-bed anaerobic reactor. *CHEMCON - 89 (Annual Session of the Indian Institute of Chemical Engineers), Trivandrum, India, Dec 15-18 (This paper won the Best Paper Award in the Session on Environmental Engineering)*

Sreekrishnan, T.R., Tyagi, R.D., Campbell, P.G.C. and Blais, J.F. (1992) " Heavy metal bioleaching from sewage sludge : Critical evaluation of the process kinetics and identification of scale-up criteria". *8th Eastern Region Conference of the Canadian*

Association on Water Pollution Research and Control, Quebec, Canada, Oct 26-27.

Sreekrishnan, T.R., Tyagi, R.D., Campbell, P.G.C. (1993) "A techno-economic study of processes for heavy metal leaching from sewage sludge". *28th Central Canadian Symposium on Water Pollution Research, Burlington, Ontario, Canada, February 10.*

Sreekrishnan, T.R. and Tyagi, R.D. (1993) "Wastewater treatment using anaerobic fluidized-bed reactors". *9th Eastern Region Conference of the Canadian Association for Water Quality, Sherbrooke, Canada, Oct 29.*

Du, Y.G., Tyagi, R.D. and Sreekrishnan, T.R. (1993) "Dynamic modelling of activated sludge process with consideration of the effects of flocculation". *9th Eastern Region Conference of the Canadian Association for Water Quality, Sherbrooke, Canada, Oct 29.*

Du, Y.G., Tyagi, R.D. and Sreekrishnan, T.R. (1994) "Effects of diffusional limitation inside the floc on dynamics of activated sludge process". *29th Central Canadian Symposium on Water Pollution Research and Control, Burlington, Ontario, Canada, February 9-10.*

Sreekrishnan, T.R. and Tyagi, R.D. (1994) "Impact of solids concentration on metal bioleaching from sewage sludge".(poster). *Water Quality International '94. IAWQ 17th Biennial International Conference, Budapest, Hungary, July 24-30.*

T.R.Sreekrishnan and R.D.Tyagi (1996) "Application of a membrane bioreactor to treat the wastewater from a pulp and paper industry". *IMS 14th National Symposium on Membranes in Chemical and Biochemical Industries, New Delhi, February 16-17.*

Tyagi, R.D., Sreekrishnan, T.R. and Surampalli, R.Y. (1996) " Simultaneous sewage sludge digestion and metal leaching: effect of process parameters".(poster). *IAWQ 18th Biennial International Conference, Singapore, 23-28 June.*

Tyagi, R.D. and Sreekrishnan, T.R. (1996) "Kinetics of aerobic digestion during the SSDML process". *Environmental Biotechnology Conference, Massey University, New Zealand, 1-4 September.*

Sreekrishnan, T.R., Ramachandran, K.B. and Ghosh, P. (1996) " Treatment of a yeast industry wastewater using an anaerobic fluidized-bed reactor". *Proceedings of the international Conference on Advances in Chemical Engineering (ICACHE-96), p 207, Madras, India, 11-13 December.*

Sreekrishnan, T.R. (1997) "Industrial waste generation : Quantum and quality". *National seminar on "Industrial Waste Management", New Delhi, July 31.*

Sreekrishnan, T.R. (1997) "Microbes in industrial effluent treatment". *Conference on "Microbes in sustainable development"*, New Delhi, December 12 –14.

Sreekrishnan, T.R., Ghosh, P. and Ramachandran, K.B. (1997) "Acidification using an anaerobic fluidized-bed bioreactor". *Proceedings of the IChE Golden Jubilee Congress, New Delhi, p182-190.*

Sreekrishnan, T.R. (1998) "Novel bioreactors for effluent treatment". *Symposium on "Pollution abatement through biological treatment of industrial effluents"*, New Delhi, March 24.

Tayal, M., Jindal, R. and Sreekrishnan, T.R. (1999) "Mathematical model for the two-stage biomethanation process", *Annual Meeting of the American Institute of Chemical Engineers, Dallas, Texas, U.S.A., September 31 – October 5.*

Sreekrishnan, T.R. (1998) "Bioreactors for treatment of toxic effluents", *National Symposium on "The Role of Microbes in the Management of Environmental Pollution"*, Punjab University, Chandigarh, November 13-14.

Ali, M. and Sreekrishnan, T.R. (1999) "Removal of AOX from bleach effluent using *S. cerevisiae*", *CHEMCON-99, Annual session of the Indian Institute of Chemical Engineers, Chandigarh, December 20-23.*

Sharma, D.K., Satya, S. and Sreekrishnan, T.R. (2000) "Acclimation of anaerobic bacterial consortium to onion storage waste", *Microbiotech-2000, Jaipur, November 25-27.*

Sharma, S., Dastidar, M.G. and Sreekrishnan, T.R. (2000) "Zinc biosorption by isolated fungi", *Indian Chemical Engineering Congress 2000, Calcutta, December 18-21.*

Gupta, A. and Sreekrishnan, T.R. (2002) "Formation of granulated sludge in anaerobic treatment reactors" *National Seminar on Biotechnology in Industry, Kochi, September 19-20.*

Thankamani, V., Giridhar, R. and Sreekrishnan, T.R. (2002) "Bioreactor for decolourisation and degradation of molasses-based distillery effluent: Preliminary studies". *Proceedings of the International Conference on Water and Wastewater Perspectives of Developing Countries (WAPDEC), December 11-13, New Delhi, India. Pp 753-760.*

Ghosh, G., Dastidar, M.G., Sreekrishnan, T.R. and Lettinga, G. (2002) "Effects of process parameters on thermophilic anaerobic acidification of wastewater". *Proceedings of the International Conference on Water and Wastewater Perspectives of Developing Countries (WAPDEC), December 11-13, New Delhi, India. Pp 777-786.*

Verma, M. and Sreekrishnan, T.R. (2002) "A comparison between rotating biological

contactor and suspended cell reactor for wastewater treatment efficiency under aerobic condition for mixed microbial consortium”. *Proceedings of the International Conference on Water and Wastewater Perspectives of Developing Countries (WAPDEC), December 11-13, New Delhi, India.* Pp 809-814.

Saravanan, V., Ali, M. and Sreekrishnan, T.R. (2002) “Treatment of agro-residue based pulp and paper mill effluents”. *Proceedings of the International Conference on Water and Wastewater Perspectives of Developing Countries (WAPDEC), December 11-13, New Delhi, India.* Pp 849-854.

Sharma, D.K., Narsiah, K., Sreekrishnan, T.R. and Santosh, S. (2002) “Codigestion of dairy industry effluent treatment plant waste with cattle excreta for energy generation: A case study”. *Proceedings of the International Conference on Water and Wastewater Perspectives of Developing Countries (WAPDEC), December 11-13, New Delhi, India.* Pp 855-860.

Ayithi, S.R. and Sreekrishnan, T.R. (2002) “Biological treatment of dairy industry effluent”. *Proceedings of the International Conference on Water and Wastewater Perspectives of Developing Countries (WAPDEC), December 11-13, New Delhi, India.* Pp 861-868.

Gautam, A., Ayithi, S.R. and Sreekrishnan, T.R. (2002) “Treatment of dairy wastewater using a novel high cell density anaerobic reactor”. *Proceedings of the International Conference on Water and Wastewater Perspectives of Developing Countries (WAPDEC), December 11-13, New Delhi, India.* Pp 869-878.

Sharma, S., Dastidar, M.G. and Sreekrishnan, T.R. (2002) “Desorption studies on zinc”. *Proceedings of the International Conference on Water and Wastewater Perspectives of Developing Countries (WAPDEC), December 11-13, New Delhi, India.* Pp1063-1068.

Sen, M., Dastidar, M.G., Sreekrishnan, T.R. and Roychoudhury, P.K. (2002) “Removal of Cr(VI) using an isolated fungal strain”. *Proceedings of the International Conference on Water and Wastewater Perspectives of Developing Countries (WAPDEC), December 11-13, New Delhi, India.* Pp1163-1170.

Saravanan V, Sreekrishnan TR, Gupta BB. (2003).” Integrated Treatment method for pulp and paper mill effluents”. *Proceedings of IWA conference on Environmental Biotechnology, Malaysia, December 9-10.*

Saravanan V, Sreekrishnan TR. (2004) “Sequential anaerobic and aerobic treatment for removal of colour from pulp and paper mill effluents”, *Proceedings of CHEMCON'04, Mumbai, India.* December 27-30.

Ramesh M, Sreekrishnan TR. (2005) “High rate treatment of low strength wastewaters in a novel anaerobic hybrid reactor”. *Proceedings of the International conference on*

“Advances in Industrial Wastewater treatment, Chennai, India., February 9-11.

Ramesh M, Sreekrishnan TR.(2005) “Feasibility of activated sludge process for the high rate treatment of low strength wastewaters”. *Proceedings of an International conference on “Microbial Diversity 2005, New Delhi, India., April 16-18.*

Vikash Talyan, R.P.Dahiya and T.R.Sreekrishnan (2005) Comparison of thermophilic and mesophilic anaerobic digestion of organic fraction of municipal solid waste. *Proceedings of the 58th Annual Session of Indian Institute of Chemical Engineers- CHEMCON 2005, December 14-17, New Delhi, India.*

M.Ramesh, R.Anirudh and T.R.Sreekrishnan (2005) Effect of substrate and HRT on the performance of activated sludge process. *Proceedings of the 58th Annual Session of Indian Institute of Chemical Engineers- CHEMCON 2005, December 14-17, New Delhi, India.*

V.Saravanan and T.R.Sreekrishnan (2005) Effect of substrate on structure of biogranules in anchored cell anaerobic reactors. *Proceedings of the 58th Annual Session of Indian Institute of Chemical Engineers- CHEMCON 2005, December 14-17, New Delhi, India.*

Ashish Pathak, M.G.Dastidar and T.R.Sreekrishnan (2005) Assessment of concentration levels of heavy metals in sewage sludges. *Proceedings of the 58th Annual Session of Indian Institute of Chemical Engineers- CHEMCON 2005, December 14-17, New Delhi, India.*

Anurag Sharma, Jaya Maitra, A.K.Ghosh, A.K.Sharma, S.P.Conover and T.R.Sreekrishnan (2005) Anti-microbial properties of silver coated hollow fiber membranes. *Proceedings of the 58th Annual Session of Indian Institute of Chemical Engineers- CHEMCON 2005, December 14-17, New Delhi, India.*

Vikash Talyan, R.P.Dahiya and T.R.Sreekrishnan (2006) Estimation of methane emission from municipal solid waste landfills: A case study for Delhi. *Proceedings of the International Conference on Sustainable Technologies for Environmental Protection, January 7-9, Coimbatore, India.*

Vikash Talyan, Anand S., R.P. Dahiya and T.R.Sreekrishnan (2006). Policy Options for Curtailing Methane Emission from Solid Waste Disposal Sites. In *proceedings of the International Conference on Mesoscale Processes Atmosphere, Ocean and Environmental Systems (IMPA)*. Centre for Atmospheric Sciences, IIT Delhi, New Delhi, India.

Technical Reports

Tyagi, R.D., Villeneuve, J.P., Sreekrishnan, T.R., Benmoussa, H., Blais,J.F., Salvano, E.,

and Shoener, F. (1994) "Study on the performance of membrane bioreactor under thermophilic conditions for the treatment of wastewaters from pulp and paper industry". *Report submitted to Envirotec Inc., Temiscamingue, Quebec, Canada.*

Bisaria, V.S and Sreekrishnan, T.R. (1998) "Grain distillery effluent treatment via anaerobic and aerobic treatment". *Report submitted to Seagram Manufacturing Pvt. Ltd., New Delhi, India.*

Sreekrishnan, T.R and V.Sahai (1999) "Process design for an effluent treatment facility", *Report submitted to M/S Sudman Laboratories Ltd., Bhiwadi, Rajasthan.*

Sreekrishnan, T.R. (2002) "Process design for an ETP for M/S International Panacea Limited" , *Report submitted to M/S International Panacea Limited, New Delhi.*

Patents

"An improved process for fluidized floc bioreactor and apparatus thereof" T.R.Sreekrishnan and Atul Gupta, Indian Patent Application No. 1479/Del/99. Application accepted on 6th February, 2005.

Books

Sreekrishnan, T.R., "Biofilm and anaerobic reactors" in " *Process computations in Biotechnology, Vol - 2* ", Ghose, T.K. (ed.), Tata McGraw Hill, India.

Sreekrishnan, T.R., " Structured model applications" in " *Process computations in Biotechnology, Vol - 2* ", Ghose, T.K. (ed.), Tata McGraw Hill, India.

Sreekrishnan, T.R. and Tyagi, R.D. (1999) "Metal removal from sewage sludge: Bioengineering and Biotechnological applications" in " *Heavy Metal Stress in plants-From Molecules to Ecosystems*", Prasad, M.N.V. and Hagemeyer, J. (eds.), Springer, Germany.

Sreekrishnan, T.R. (1999) "Biological treatment processes for industrial solid wastes", in " *Industrial solid waste management and landfilling practice*", Dutta, M., Parida, B.P., Guha, B.K. and Sreekrishnan, T.R. (eds.), Narosa Publishing House, New Delhi.

Papers published in refereed journals:

Sreekrishnan, T.R., Ramachandran, K.B. and Ghosh, P. (1991) "Effect of operating variables on biofilm formation and performance of an anaerobic fluidized-bed bioreactor". *Biotechnol.Bioeng.*, **37**, 557-566.

Sreekrishnan, T.R., Tyagi, R.D., Blais, J.F. and Campbell, P.G.C. (1993) "Kinetics of

heavy metal bioleaching from sewage sludge - I: Effects of process parameters". *Water Res.*, **27**, 1641-1651.

Tyagi, R.D., Sreekrishnan, T.R., Campbell, P.G.C. and Blais, J.F. (1993) "Kinetics of heavy metal bioleaching from sewage sludge - II: Mathematical model". *Water Res.*, **27**, 1653-1661.

Tyagi, R.D., Du, Y.G., Sreekrishnan, T.R. and Villeneuve, J.P. (1993) "Neural model for the operational control of activated sludge processes". *Process Biochem.*, **28**, 259 - 267.

Tyagi, R.D., Sreekrishnan, T.R., Campbell, P.G.C. and Blais, J.F. (1994) "Kinetics of heavy metal bioleaching from sewage sludge - III: Temperature effects", *Water Res.*, **28**, 2367-2375.

Sreekrishnan, T.R. and Tyagi, R.D. (1994) "Heavy metal leaching from sewage sludge: A techno-economic evaluation of the process options". *Environmental Technology*, **15**, 531-543.

Du, Y.G., Sreekrishnan, T.R. and Tyagi, R.D. (1994) " Effect of pH on metal solubilization from sewage sludge: A neural-net based approach". *Canadian Journal of Civil Engineering*, **21**, 728-735.

Sreekrishnan, T.R. and Tyagi, R.D. (1995) " Sensitivity of metal bioleaching operation to process variables". *Process Biochem.*, **30**, 69-80.

Du, Y.G., Tyagi, R.D., and Sreekrishnan, T.R. (1995) " Operational strategy for metal bioleaching process based on pH measurements". *Journal of Environmental Engineering (ASCE)*, **121**, 527-535.

Sreekrishnan, T.R. and Tyagi, R.D. (1996) " A comparative study of the cost of leaching out heavy metals from sewage sludges", *Process Biochem.*, **31**, 31-41.

Sreekrishnan, T.R., Tyagi, R.D., Blais, J.F., Meunier, N. and Campbell, P.G.C. (1996) "Modelling the bacterial decay coefficient during the SSDML process". *Journal of Environmental Engineering (ASCE)*, **122**, 995-1002.

Sreekrishnan, T.R., Tyagi, R.D., Blais, J.F., Meunier, N. and Campbell, P.G.C. (1996), " Effect of sulfur concentration on sludge acidification during the SSDML process". *Water Res.*, **30**, 2728-2738.

Tyagi, R.D., Sreekrishnan, T.R., Blais, J.F., Surampalli, R.Y. and Campbell, P.G.C. (1998) " Effect of dissolved oxygen on sludge acidification during the SSDML process". *Water, Air and Soil Pollution*, **102**, 139-155

Sreekrishnan, T.R and Ali, M.(1999) “New developments in bioreactor design for biomethanation process”, *Bio-energy News*, **3**(4), 20-23.

Ali, M. and Sreekrishnan, T.R. (2000) “Anaerobic treatment of agriresidue based pulp and paper mill effluents for AOX and COD reduction”, *Process Biochem.*, **36**, 25-31.

Ali, M. and Sreekrishnan, T.R. (2001) “Aquatic toxicity from pulp and paper mill effluents : a review”, *Advances in Environmental Research*, **5**, 175-196.

S.Basu, R.Gaur, J.Gomes, T.R.Sreekrishnan and V.S.Bisaria (2002) “ Effect of Seed Culture on Solid State Bioconversion of Wheat Straw by *Phanerochaete chrysosporium* to Animal Feed”, *J.Biosci. Bioeng.*, **93**, 25-30

Surekha Sharma, Manisha Ghosh Dastidar and T.R.Sreekrishnan (2002) “Zinc Uptake by Fungal Biomass Isolated from Industrial Wastewater”, *ASCE Practice Periodical of Hazardous, Toxic and Radioactive Waste Management*, **6**, 256-261

S. Sharma, M.G. Dastidar and T.R. Sreekrishnan (2003) “Biological removal of zinc from wastewater using *Aspergillus* sp”, *European Journal of Mineral Processing and Environmental Protection*, **3** (1).

D.Kumar, S.Garg, V.S.Bisaria, T.R.Sreekrishnan and J.Gomes (2003) “ Production of methionine by a multi-analogue resistant mutant of *Corynebacterium lilium*” , *Process Biochemistry*, **38**, 1165-1171.

Yadvika, Santosh, T.R.Sreekrishnan, Sangeeta Kohli and Vineet Rana (2004) “Enhancement of biogas production from solid substrates using different techniques-a review” *Bioresource Technology*, **95**, 1-10.

Mohsen Nosrati, Seyed Abbas Shojaosadati, T.R.Sreekrishnan and S.N.Mukhopadhyay (2004) “Inhibition of thermophilic anaerobic digestion of waste food by long chain fatty acids and propionate” *Iranian Journal of Biotechnology*, **2** (4), 261-268.

V.Saravanan and T.R.Sreekrishnan (2005) “Bio-physico-chemical treatment for removal of colour from pulp and paper mill effluents” *Journal of Scientific and Industrial Research*, **64**, 61-64.

D. Kumar, K. Subramaniam, V. S. Bisaria, T. R. Sreekrishnan and J. Gomes (2005) "Effect of Cysteine on Methionine Production by a Regulatory Mutant of *Corynebacterium lilium*", *Bioresource Technol.*, **96**, 287-294.

M.Verma, T.R.Sreekrishnan and R.D.Tyagi (2005) “Cell agglomeration in acidogenic, mixed and methanogenic cultures at different loading and mixing conditions”, *Environmental Technology*, **26**, 745-756.

- V.Saravanan and T.R.Sreekrishnan (2005) "Hydrodynamic study of biogranules obtained from an anaerobic hybrid reactor" *Biotechnol. Bioeng.*, **91**, 715-721.
- Yadvika, Asheesh Kumar Yadav, T.R.Sreekrishnan, Santosh Satya and Sangeeta Kohli (2006) "A modified method for estimation of chemical oxygen demand for samples having high suspended solids", *Bioresource Technology*, **97**, 721-726.
- Mohsen Nosrati, Seyed Abbas Shojaosadati and T.R.Sreekrishnan (2006) "Thermophilic aerobic digestion of activated sludge: Reduction of solids and pathogenic microorganisms" *Iranian Journal of Chemistry and Chemical Engineering*, **25**(1), 67-71.
- V.Saravanan and T.R.Sreekrishnan (2006) "Modelling biofilm reactors – A review", *Journal of Environmental Management*, **81**(1), 1-18.
- Vikash Talyan, Anand, S. , R.P.Dahiya and T.R.Sreekrishnan (2006) "Quantification of methane emissions from municipal solid waste disposal in Delhi" , *Resource Conservation and Recycling*, **50** (3), 240-259.
- M.V.Ganesan, V.Saravanan and T.R.Sreekrishnan (2006) "Formation and hydrodynamic characteristics of aerobic granules in an activated sludge system", *Environmental Technology*, **28**, 217-224.
- Mohsen Nosrati, T.R.Sreekrishnan and S.N.Mukhopadhyay (2006) "Energy audit, solids reduction and pathogen inactivation in secondary sludges during batch thermophilic aerobic digestion process", *Journal of Environmental Engineering*, **133** (5), 477-484.
- Yadvika, T.R. Sreekrishnan, S.Santosh and S.Kohli (2006) "Effect of HRT and slurry concentration on biogas production in cattle dung based anaerobic bioreactors", *Environmental Technology*, **28**, 433-442.
- Mohsen Nosrati, Mehdi Jalali, T.R.Sreekrishnan and Seyed Abbas Shojaosadati (2007) "Determination of bio-oxidation energy released by thermophiles in secondary and mixed bio-solids" *Iranian Journal of Chemistry and Chemical Engineering*, **26**(2), 125-130.
- V. Saravanan and T.R. Sreekrishnan (2007) "A mathematical model for a hybrid anaerobic reactor" *Journal of Environmental Management*, **88**(1), 136-146.
- Vikash Talyan, Anand, S, R.P.Dahiya and T.R.Sreekrishnan (2008) "State of Municipal Solid Waste Management in Delhi, The Capital of India". *Waste Management*, **28**(7), 1276-1287
- Mukesh Goel, M. Ramesh and T.R. Sreekrishnan (2007) "Mixed culture acclimatization and biodegradation of Chlorophenols in Shake Flasks: Effect of the Inoculum Source", *ASCE Practice Periodical of Hazardous, Toxic and Radioactive Waste Management*, **13**

(1), 29-34

Amit Kumar, Asheesh Kumar Yadav, T.R. Sreekrishnan, Santosh Satya and C.P. Kaushik (2008) "Treatment of low strength industrial cluster wastewater by anaerobic hybrid reactor", *Bioresource Technology*, **99** (8), 3123-3129

Sk Z.Ahammad, J.Gomes and T.R.Sreekrishnan (2008) "Wastewater treatment for production of H₂S – free biogas", *Journal of Chemical Technology and Biotechnology*, **83**(8), 1163-1169.

Radha Goyal, Sreekrishnan T.R, Mukesh Khare, Sushil Kumar Yadav and Meha Chaturvedi (2007) "An Experimental Study on Color Removal from Textile Industry Wastewater Using the Rotating Biological Contactor" *ASCE Practice Periodical of Hazardous, Toxic and Radioactive Waste Management* (In Press).

Raghav Narayanan and T.R.Sreekrishnan (2008) "A Two-Stage Process for Simultaneous Thermophilic Sludge Digestion, Pathogen Control and Metal Leaching", *Environmental Technology*, **30** (1), 21-26.

M.Ramesh, V.Saravanan and T.R.Sreekrishnan (2008) "Tapered anaerobic hybrid reactor – A better option for treating low strength wastewaters", *Environmental Technology* (In Press).

Meenu Chhabra, Saroj Mishra and T.R.Sreekrishnan (2008) "Mediator-assisted decolorization and detoxification of textile dyes/dye mixture by *Cyathus bulleri* laccase", *Applied Biochemistry and Biotechnology* (In Press)

Ashish Pathak, M.G.Dastidar and T.R.Sreekrishnan (2009) "Bioleaching of heavy metals from sewage sludge: A review", *Journal of Environmental Management*, **90**, 2343-2353.

Ashish Pathak, M.G.Dastidar and T.R.Sreekrishnan (2008) "Bioleaching of heavy metals from anaerobically digested sewage sludge", *Journal of Environmental Science and Health, Part-A*, **43**(4), 402-411.

Ashish Pathak, M.G.Dastidar and T.R.Sreekrishnan (2009) "Bioleaching of heavy metals from sewage sludge by indigenous iron-oxidizing microorganisms using ammonium ferrous sulfate as energy sources: A comparative study", *Journal of Hazardous Materials* (In Press).

Rohan Jain, Ashish Pathak, T.R.Sreekrishnan and M.G.Dastidar (2009) "Autoheated thermophilic aerobic sludge digestion (ATAD) and metal bioleaching in a two-stage reactor system", *Journal of Environmental Sciences* (In Press).

Removal of chromium and nickel from aqueous solution in constructed wetland: Mass balance, adsorption-desorption and FTIR study,

Author(s): Yadav AK, Kumar N, Sreekrishnan TR, et al.

Source: **CHEMICAL ENGINEERING JOURNAL** Volume: **160** Issue: **1** Pages: **122-128**

Autoheated thermophilic aerobic sludge digestion and metal bioleaching in a two-stage reactor system , Jain R, Pathak A, Sreekrishnan TR, et al.

Source: **JOURNAL OF ENVIRONMENTAL SCIENCES-CHINA** Volume: **22** Issue: **2**
Pages: **230-**

The remediation of wastewater containing 4-chlorophenol using integrated photocatalytic and biological treatment

Author(s): Goel M, Chovelon JM, Ferronato C, et al.

Source: **JOURNAL OF PHOTOCHEMISTRY AND PHOTOBIOLOGY B-BIOLOGY**
Volume: **98** Issue: **1** Pages: **1-6**

Bioleaching of heavy metals from sewage sludge by indigenous iron-oxidizing microorganisms using ammonium ferrous sulfate and ferrous sulfate as energy sources: A comparative study

Author(s): Pathak A, Dastidar MG, Sreekrishnan TR

Source: **JOURNAL OF HAZARDOUS MATERIALS** Volume: **171** Issue: **1-3** Pages: **273-278**

Laccase/mediator assisted degradation of triarylmethane dyes in a continuous membrane reactor

Author(s): Chhabra M, Mishra S, Sreekrishnan TR

Source: **JOURNAL OF BIOTECHNOLOGY** Volume: **143** Issue: **1** Pages: **69-78**

Bioleaching of heavy metals from sewage sludge: A review

Author(s): Pathak A, Dastidar MG, Sreekrishnan TR

Source: **JOURNAL OF ENVIRONMENTAL MANAGEMENT** Volume: **90** Issue: **8**
Pages: **2343-2353**

A two-stage process for simultaneous thermophilic sludge digestion, pathogen control and metal leaching

Author(s): Narayanan R, Sreekrishnan TR

Source: **ENVIRONMENTAL TECHNOLOGY** Volume: **30** Issue: **1** Pages: **21-26**
Published: **2009**

High strength wastewater treatment accompanied by power generation using air cathode microbial fuel cell

S Sevda, X Dominguez-Benetton, K Vanbroekhoven, H De Wever, TR Sreekrishnan ...

Applied Energy 105, 194-206

Characterization and comparison of the performance of two different separator types in air-cathode microbial fuel cell treating synthetic wastewater
S Sevda, X Dominguez-Benetton, K Vanbroekhoven, TR Sreekrishnan, D Pant
Chemical Engineering Journal

Effect of Heat Pretreated Consortia on Fermentative Biohydrogen Production from Vegetable Waste
SK Bansal, TR Sreekrishnan, R Singh
National Academy Science Letters, 1-7

Effect of foulants on arsenic rejection via polyacrylonitrile ultrafiltration (UF) membrane
GP Agarwal, R Karan, S Bharti, H Kumar, S Jhunjhunwala, TR Sreekrishnan, U ...
Desalination 309, 243-246

Rational immobilization of methanogens in high cell density bioreactors
SZ Ahammad, RJ Davenport, LF Read, J Gomes, TR Sreekrishnan, J Dolfing
RSC Advances 3 (3), 774-781

Changes in microbial communities in a hybrid anaerobic reactor with organic loading rate and temperature
K Kundu, S Sharma, TR Sreekrishnan
Bioresource technology

Start-up and performance of a hybrid anoxic reactor for biological denitrification
S Bhuvanesh, N Maneesh, TR Sreekrishnan
Bioresource technology

DNA-Based Methods Reveal Complex Kinetics of MSW Leachate Anaerobic Digestion
S Pal, SK Gupta, TR Sreekrishnan, SS Maitra
Journal of Hazardous, Toxic, and Radioactive Waste 17 (2), 156-162

The removal of heavy metals in wetland microcosms: Effects of bed depth, plant species, and metal mobility
AK Yadav, R Abbassi, N Kumar, S Satya, TR Sreekrishnan, BK Mishra
Chemical Engineering Journal

Effect of operating temperatures on the microbial community profiles in a high cell density hybrid anaerobic bioreactor
K Kundu, S Sharma, TR Sreekrishnan
Bioresource Technology 118, 502-511

Removal of various pollutants from wastewater by electrocoagulation using iron and aluminium electrode
AK Yadav, L Singh, A Mohanty, S Satya, TR Sreekrishnan
Desalination and Water Treatment 46 (1-3), 352-358

Effect of salt concentration and mediators in salt bridge microbial fuel cell for electricity generation from synthetic wastewater
S Sevda, TR Sreekrishnan
Journal of Environmental Science and Health, Part A 47 (6), 878-886

Summary of research work carried out during the Doctoral Programme

The Doctoral project was titled "Operational characteristics of fluidized-bed reactors for anaerobic process". Two fluidized-bed reactor systems were designed and fabricated for this purpose. Anaerobic degradation of a synthetic glucose-based effluent as well as an effluent from a bakers' yeast manufacturing unit were studied using these reactors. Sand was used as the inert carrier in the reactors and the factors which affect the formation of biofilm on the carrier particle were studied as a function of (i) dilution rate (or, hydraulic retention time) (ii) COD loading rate (iii) quality of the inoculum used and (iv) quantity of inoculum used. The major factors affecting the biofilm formation process were identified and a conceptual model was proposed for the process of biofilm formation.

Theoretical as well as experimental studies were also carried out to explain the bed fluidization characteristics of a biological fluidized-bed and also to explain the substrate diffusion and reaction taking place in the biofilm.

Detailed studies were carried out using mixed cultures of acidogenic and methanogenic bacteria separately also to corroborate earlier conclusions.

Post-doctoral experience

Worked as Senior Scientific Officer in a DBT (Department of Biotechnology, Government of India) sponsored project for ten months at IIT, Delhi. The project was titled "Process optimization of restriction enzymes: large scale production and purification". The objective was to optimize the complete process for the production of restriction enzymes Bgl II, Eco RI and Bam HI. The work involved production of the cells in fermenters of 6 to 30 litre capacity, downstream processing for release of the intracellular enzymes followed by purification of the enzymes using chromatographic technics. Study of parameters affecting cell as well as enzyme production was done during the fermentation as well as downstream processing and purification stages.

Worked as a Senior Technical Officer at the Technical Centre of McDowell & Co. Ltd., a private company having manufacturing units all over India, for a period of fourteen months. The work involved performance monitoring, process updating and troubleshooting in the areas of fermentation, distillation and wastewater treatment. Many of the existing wastewater treatment facilities were modified to improve the performance and new, state-of-the-art technologies were implemented at many places.

Worked as a post-doctoral scientist at INRS-Eau, Quebec, Canada for a period of three years. The work involved study of the kinetics of heavy metal bioleaching process as well as the

simultaneous sludge digestion and metal leaching (SSDML) process for heavy metal removal from sewage sludges. Also involved in an industry-institute collaborative project funded by the provincial and federal governments as well as participating industries to treat the effluents generated by pulp and paper mills using a novel reactor configuration.

Presently employed as Professor at the Department of Biochemical Engineering and Biotechnology, Indian Institute of Technology, Delhi. Duties include teaching at the undergraduate and post-graduate levels as well as academic and applied research. Research interests are mainly on application of biochemical engineering for solving environment-related problems. Process and reactor development for aerobic as well as anaerobic biological treatment of waste waters, wastewater sludges and solid wastes, treatment of toxic wastes, development of biosensors for environmental monitoring are some of the areas currently being looked into.

Have already produced nineteen (19) Ph.Ds, forty (40) M.Techs and eight (08) M.S (Research.) graduates in this area. Currently supervising nine (09) Ph.D and two (02) M.Tech projects in these areas. Currently involved in eight sponsored research projects/consultancy projects in these areas. These projects are funded/sponsored by Government agencies like Department of Biotechnology(DBT), Ministry of Environment and Forests(MOEF), Ministry of Non-conventional Energy Sources(MNES), Municipal Corporation of Delhi(MCD) as well as Private Industries.

Administrative Tasks

- Chairman, Grades and Registration, Undergraduate Studies (2006-2009)
- Chairman, Grades and Registration, Post-graduate Studies (2007- 2010)
- Vice-Chairman, Joint Entrance Examination, JEE-2008
- Vice-Chairman, Joint Entrance Examination, JEE-2009
- Associate Dean, Undergraduate Studies, 2009 – 2012
- Vice-Chairman, Joint Entrance Examination (Advanced) – 2013
- Vice-Chairman, Joint Entrance Examination (Advanced) – 2014
- Head, Department of Biochemical Engineering and Biotechnology, 2011 – to date.