Name	Dr. Sanjeev Tambe
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Subjects: Chemical Engineering; Theory, Computation & Modeling; Physical Chemistry

Education and experience

- 1981-1986: Research Fellow at Chem. Engg. & Process Development Division of NCL, Pune leading to Ph.D (Bombay University) in Physical Chemistry.
- 1987- till date: Scientist in Reaction Engineering Group at Chemical Engineering & Process Development Division, National Chemical Laboratory, Pune, India.
- 1990-199: Research Associate at Dept. of Geology, Univ. of Louisville, Louisville, KY, USA.
- 1996: Visiting Scientist at Dept. of Chem. Engg., Univ. of Louisville, Louisville, KY, USA.

Achievements

- The neural network paper in the *FEBS Letters* journal was highlighted on the journal cover. This paper was among the top 30 papers published by the CSIR scientists in the year (1994).
- Papers based on the SPSA (simultaneous perturbation stochastic approximation) and genetic algorithm optimization formalisms have been cited as important contributions on the web pages of the respective methodologies.
- An artificial intelligence based modeling, optimization and supervisory control strategies and the software thereof have been developed for National Thermal Power Corporation's (NTPC) 500 megawatt thermal power station at Simhadri, Andhra Pradesh.
- The research paper titled "Artificial neural networks for prediction of mycobacterial promoter sequences" *Computational Biology and Chemistry*, 27 (6), December 2003, Pages 555-564 by Kalate, R.N., Tambe S.S. and Kulkarni, B.D. was adjudged as the "Top 25 Hottest Articles" in "Computational Biology and Chemistry" During October - December 2004 by *ScienceDirect*.
- Grant of European and US patents (2006, 2007) for the algorithm improving performance of artificial neural network models when data is infected by instrumental noise and measurement errors. This is first European Patent in the area of artificial intelligence granted to an Indian organization.
- Number of third party citations (excluding self-citations) to research papers: > 800

Research Area

- Design, development and application of Artificial Intelligence (AI) formalisms for modeling, monitoring, optimization and control of chemical, chemical engineering /technology, biochemical and biological processes.
- Analysis and control of nonlinear processes; Applications of fractal theory
- Modeling of chemical systems using phenomenological approaches; Modeling of gas-solid non-catalytic reactions
- Modeling using multi-variate statistical approaches such as principal component analysis (PCA), principal component regression (PCR) and partial least squares (PLS).

Some recent publications

- S. Nandi, S. Ghosh, S.S. Tambe, B.D. Kulkarni (2001) Artificial neural network assisted stochastic process optimization strategies, *AIChE. J.* 47(1), 126-141.
- Kiran Desai, Yogesh Badhe, Sanjeev S. Tambe and Bhaskar D. Kulkarni' Soft-sensor Development for Fed Batch Bioreactors using Support Vector Regression, *Biochemical Engineering Journal,* Vol 27, Issue 3, 225-239 (2005).
- S. Patel, B. Jeevan Kumar, Y. P. Badhe, S. Saha, S. Biswas, Asim Chaudhuri, B. K. Sharma, S. S. Tambe, and B. D. Kulkarni, "Estimation of Gross Calorific Value of Coals using Artificial Neural Networks", *Fuel* , 86, 334-344 (2007).
- Y. P. Badhe, J. Lonari, S. S. Tambe, B. D. Kulkarni, N. K. Valecha, S. V. Deshmukh and S. Ravichandran, Improve polyethylene process control and product quality: Using artificial intelligence-based sensors can improve costs, *Hydrocarbon Processing, 86 (3), pp. 53-54+56+58+60* (2007).
- Y. P. Badhe, Y. P. Pandit, B. K. Sharma, S. S. Tambe and B. D. Kulkarni, Classification of Indian Power Coals Using K-means clustering and Self Organizing Map Neural Network**,** ***Fuel*****,** Volume 90, issue 1, pp. 339-347 (2011).