

Dr. Rajkamal Kushwaha

Assistant Professor

Department of Biochemical Engineering

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Research Interest:

Nanoparticle synthesis and characterization; Advance oxidation processes; Ozonation and ozonation related processes; Homogenous and Heterogeneous catalysis; Wastewater treatment

Experience:

- **Guest Faculty (September 2020 to December 2020)**

Department of Biotechnology, Dr B R Ambedkar National Institute of Technology (NIT), Jalandhar, Punjab

Subjects Taught:

- (1) Bioprocess Calculations
- (2) Industrial Biotechnology
- (3) Food process Biotechnology
- (4) Separation process laboratory

- **Guest Faculty (January 2021 to June 2021)**

Department of Biotechnology, Dr B R Ambedkar National Institute of Technology (NIT), Jalandhar, Punjab

Subjects Taught:

- (1) Bioprocess safety and Bioethics
- (2) Analytical Methods in Biotechnology
- (3) Biological Wastewater Treatment Laboratory

Qualifications:

- Ph.D., Department of Chemical Engineering, NIT Jalandhar;
 - M.Tech., Chemical Engineering, NIT Jalandhar;
 - B.Tech. Biotechnology, AKTU (UPTU), Lucknow.
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Academic Record

Degree	Board/University/ Institute	Year of Passing	Division/ CGPA/% Marks	Major Subjects
Ph.D. (Chemical Engineering)	Dr B R Ambedkar National Institute of Technology (NIT), Jalandhar	2020	1 st Div. in course work CGPA- 8.25	Advanced Oxidation Processes, Catalysis, Wastewater Treatment, and Nanotechnology
M.Tech. (Chemical Engineering)	Dr B R Ambedkar National Institute of Technology (NIT), Jalandhar	2014	1 st Div. CGPA- 7.77	Chemical Reaction Engineering, Fluid flow, Catalysis, Wastewater Treatment, and Nanotechnology
B.Tech. (Biotechnology)	Dr. A.P.J. Abdul Kalam Technical University Uttar Pradesh, Lucknow (Formerly G.B.T.U. or U.P.T.U.)	2012	1 st Div. 66.0%	Biochemistry, and Bioprocess Engineering
Senior Secondary (10+2)	Sainik School Ghorakhal, Nainital, Uttarakhand (C.B.S.E Board)	2006	1 st Div. 70.2%	Maths, Physics, Chemistry, and Computer
Higher Secondary (10)	Sainik School Ghorakhal, Nainital, Uttarakhand (C.B.S.E Board)	2004	1 st Div. 72.4%	Maths, Physics, Chemistry, and Biology

Academic Projects:

1) Ph.D.

Dissertation Title: Degradation of dye from aqueous solution using Fenton like oxidation process, ozonation and ozonation related processes.

2) M.Tech.

Dissertation Title: Application of artificial neural network for the prediction of sorption capacity of Nano-Fe₃O₄ and Nano-Fe₃O₄-SiO₂ for the removal of lead and cadmium ions from aqueous solution

3) B.Tech.

- a) **Dissertation Title:** Testing of Milk Quality by various Methods like Ph Testing, Alcohol Testing, MBRT Testing at *Mother Dairy Foods Processing Ltd. Unit: Mother Dairy, Delhi (one month summer training)*
 - b) The effects of antibiotics on E.coli viability and process (an in-vitro study)
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Research Publications: (SCI Journals-3 Published)

Title of the Paper	Author (s)	Name of the Journal	Vol. & Year
Degradation of Nile blue sulfate dye onto iron oxide nanoparticles: Kinetic study, identification of reaction intermediates, and proposed mechanistic pathways	Rajkamal Kushwaha, Sangeeta Garg, Shailendra Bajpai & Ardhendu Sekhar Giri	Asia-Pacific Journal of Chemical Engineering, (WILEY Publication)	13(3), 2018
Modified generalized kinetic model and degradation mechanistic pathways for catalytic oxidation of NBS dye in Fenton like oxidation process	Rajkamal Kushwaha, Sangeeta Garg & Shailendra Bajpai,	Research on Chemical Intermediates, (Springer Publications)	44(10) & 2018
Modeling and optimization of Nile blue sulfate dye mineralization by heterogeneous Fenton oxidation.	Rajkamal Kushwaha, Sangeeta Garg & Shailendra Bajpai,	Toxicological and Environmental Chemistry, (Taylor and Francis)	101(1-2) & 2019
Performance evaluation of MS-IONPs in pilot plant bubble column reactor for the degradation of NBS dye	Rajkamal Kushwaha, Sangeeta Garg & Shailendra Bajpai,	Under Review Journal of Environmental Chemical Engineering	
Kinetic modelling and degradation mechanistic pathways for the degradation of NBS dye in ozonation related processes	Rajkamal Kushwaha, Sangeeta Garg & Shailendra Bajpai,	Communicated Research on Chemical Intermediates	

Book Publications:

Authors names	Title	Publishers	Vol. No	Year
Rajkamal Kushwaha & Sangeeta Garg	Application of Iron Oxide Nanoparticles for Removal of Heavy Metals	LAP LAMBERT Academic Publishing, Germany,	ISBN-978-613-9-91638-2	2018

Papers Presented in National/International Conference:

Title of the Paper	Author (s)	Name of the Conference	Vol. & Year	Pages
Degradation of Nile Blue Sulphate Dye in Pilot Plant Bubble Column Reactor	Rajkamal Kushwaha, Dr. Sangeeta Garg, Dr. Shailendra Bajpai	International Conference CHEMCON-2018, December 27-30, 2018	1 & 2018	236
Synthesis and characterization of mesoporous silica coated Iron oxide nanoparticles: Application in adsorptive removal of Nile blue sulfate dye	Rajkamal Kushwaha, Sangeeta Garg & Shailendra Bajpai	International Conference CHEMCON-2016, December 27-30, 2016.	1 & 2016	1004
Synthesis and characterization of iron oxide nanoparticles: application in removal of cadmium and lead metal ions from waste water	Rajkamal Kushwaha, Sangeeta Garg & Shailendra Bajpai	International Conference on Redefining Textiles: Cutting Edge Technology of the Future, RTCT-2016, April 8-10, 2016	1 & 2016	694-703
Removal of cadmium and lead metal ions from synthetic wastewater using iron oxide nanoparticles (nano-Fe ₃ O ₄)	Rajkamal Kushwaha, Sangeeta Garg	International Conference CHEMCON 2015 "Chemical Engineering: From Laboratory to Industry" 27-30 December, 2015	1 & 2015	1620-1625

One pot synthesis and use of silica coated iron oxide nanoparticles as selective adsorbents for heavy metal ions	Rajkamal Kushwaha, Sangeeta Garg & Shailendra Bajpai,	National conference "Advances in Chemical Science & Technology", April 27-28, 2018	1 & 2018	55
Application of Artificial neural network for the removal of toxic metal ions from aqueous solution	Rajkamal Kushwaha, Sangeeta Garg & Shailendra Bajpai,	National conference on "Advances in Chemical Science & Technology", April 27-28, 2018	1 & 2018	55
Synthesis and characterization of iron oxide nanoparticles: application in adsorptive removal of Nile Blue Sulphate dye	Rajkamal Kushwaha, Sangeeta Garg & Shailendra Bajpai	National conference on "Advances in Chemical & Environmental Engineering", April 22-23, 2016	1 & 2016	36
Synthesis and characterization of inorganic silica modified iron oxide nanoparticles: application in removal of cadmium and lead metal ions from waste water	Rajkamal Kushwaha, Sangeeta Garg & Shailendra Bajpai	National conference on "Advances in Chemical & Environmental Engineering", April 22-23, 2016	1 & 2016	37

Seminars/Conferences/Workshops Attended:

Title of the Program	Organized by	From	To	Duration
National conference on "Advances in Chemical Science & Technology" (ACST-2018)	Department of Chemical Engineering, National Institute of Technology, Jalandhar in joint collaboration with Department of Chemistry, Government Women Engineering College, Ajmer, Rajasthan, India	27-Apr-2018	28-Apr-2018	2 days

National Conference on "Advances in Chemical and Environmental Engineering" (ACEE'16)	Department of Chemical Engineering, National Institute of Technology, Jalandhar	22-Apr-2016	23-Apr-2016	2 days
International Conference on "Redefining Textiles: Cutting Edge Technology of the Future"	Department of Textile Technology, NIT Jalandhar	08-Apr-2016	10-Apr-2016	3 days
Indo - US Joint International Conference on "Sustainable Technologies for Energy and Environment in Process Industry"	Department of Chemical Engineering, NIT Jalandhar	27-Dec-2012	30-Dec-2012	4 days
ISTE Engineering Education Congress and National Seminar on "Sustainability of Engineering Education"	Department of Chemical Engineering, NIT Jalandhar	26-Mar-2015	27-Mar-2015	2 days
Workshop on "Filter Media Characterization"	Department of Textile Technology, NIT Jalandhar	15-Dec-2014	15-Dec-2014	1 day
Workshop on " Air Pollution Control in Industries"	Department of Textile Technology, NIT Jalandhar	24-Feb-2012	24-Feb-2012	1 day

Professional Training Received/Summer Schools/Winter Schools Attended:

Nature of Training	Year	Duration	Organization Where Training was provided
Workshop cum Training on "Training and Practice on MATLAB for Engineering Solutions" (TPMES-20)	2020	Five Days	Department of Mechanical Engineering, NIT Jalandhar
One Week Online Short Term Course on "Advances in Chemical, Biochemical and Allied Industries"	2020	Five Days	Department of Chemical Engineering, NIT Jalandhar
Global Initiative of Academic Networks International Winter Term Course on " Chemical Process Safety and Hazards Management" CPSHM-17	2017	Five Days	Department of Chemical Engineering, NIT Jalandhar

Inter National Winter Term GIAN Course on "Natural Smart Materials For Bio Medical Applications (NSMBA-2016)"	2016	Five Days	Department of Chemistry, NIT Jalandhar
International Summer Term GIAN Course on "Industrial Catalytic Technology (ICT-2016)"	2016	Five Days	Department of Chemical Engineering, NIT Jalandhar
International Summer Term GIAN Course on "Nanotechnology: Synthesis, Characterization, Fabrication and Applications"	2016	Five Days	Department of Chemistry, NIT Jalandhar
Short Term course on "Water Quality and Management	2016	Five Days	Department of Chemical Engineering, NIT Jalandhar
Industry Institute Interaction Programme	2016	Two days	Department of Chemical Engineering, NIT Jalandhar
Short Term Course on "Current Opportunities and New Directions in Chemical Sciences and Technology"	2015	Seven Days	Department of Chemistry, NIT Jalandhar
Short Term course on "Recent Advances in Energy Technology"	2014	Five Days	Department of Chemical Engineering, NIT Jalandhar
Short Term Training Programme on "Recent Advances in Energy Technology" (Under TEQIP-II)	2014	Five Days	Department of Chemical Engineering, NIT Jalandhar
ISTE-SRM Short Term Course on "Recent Advances in Hydrocarbon Engineering"	2014	Five Days	Department of Chemical Engineering, NIT Jalandhar & Sponsored by Indian Society for Technical Education, New Delhi & SRM Univ., Chennai

Leadership and Management Stints:

- a. *Member, Organizing Committee* of National Conference on "Sustainable Research in Energy and Environment (SREE-2021)" held at NIT Jalandhar on January 15-16, 2021.
- b. *Member, Organizing Committee* of One Week Online Short Term Course on "Advances in Chemical, Biochemical and Allied Industries" held at NIT Jalandhar on November 05-09, 2020.
- c. *Member, Student Organizing Committee* of Occupational Safety and Environmental Management in Process Industries (OSEMPI-19) held at NIT Jalandhar on June 03-07, 2019.

- d. *Member, Student Organizing Committee of CHEMCON 2018 held at NIT Jalandhar on December 27-30, 2018.*
 - e. *Member, Student Organizing Committee of National Conference on “Advances in Chemical Science and Technology-2018 held at NIT Jalandhar on April 27-28, 2018.*
 - f. *Member, Student Organizing Committee of Industry Institute Interaction Programme -2016 held at NIT Jalandhar on March 05-06, 2016.*
 - g. *Member, Student Organizing Committee of National Conference on “Advances in Chemical and Environmental Engineering -2016” held at NIT Jalandhar on April 22-23, 2016.*
 - h. *Member, Student Organizing Committee of Water Quality Management held at NIT Jalandhar on June 20-24, 2016.*
 - i. *Member, Student Organizing Committee of Academic Environment in Higher Technical Education: Future Perspective held at NIT Jalandhar on September 30-October 01, 2016.*
 - j. *Member, Student Organizing Committee of Inter National Winter Term GIAN Course on "Natural Smart Materials for BioMedical Applications (NSMBA-2016)"at NIT Jalandhar on November 07-11, 2016.*
 - k. *Member, Student Organizing Committee of Inter National Winter Term GIAN Course on "Nanotechnology: Synthesis, Characterization, Fabrication and Applications "at NIT Jalandhar on June 06-11, 2016.*
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