

Ardhendu Sekhar Giri

Assistant Professor



Key Research Areas:

- Advanced Oxidation Processes
- Catalysis and Aqueous Chemistry
- Pharmaceutical wastewater treatment
- Biosensors, doping methodology and bioremediation
- Toxicology and Nanotechnology

Contact:

Email: drag82@gmail.com; ardhendu.che@rahul.ac.in

Mobile: +91-9732666483; +91-9041328935 (M)

Location: Room No. – **CH 301** (Chemical Engineering Building)

Education:

Doctor of Philosophy (Chemical Engineering), Indian Institute of Technology Guwahati, India, 2015

M. Tech. (Chemical Engineering), Calcutta University, Kolkata, India, 2009

B. E. (Chemical Engineering), Calcutta University, Kolkata, India, 2007

Major Research Interest (s):

- Heterogeneous Photocatalytic processes
- Nanocatalyst

Publication (s):

Peer Reviewed Journals:

- **A.S. Giri and A. K. Golder**, “Drug mixture decomposition in photo-assisted Fenton process: comparison to singly treatment, evolution of inorganic ions and toxicity assay”, **Chemosphere** 2015, 127, 254-261
- **A.S. Giri and A.K. Golder**, “Formation of Fe(II)-Chloramphenicol chelate and its decomposition in Fenton and Photo-Fenton: Identification and biodegradability assessment of primary by products”, **Industrial Engineering & Chemistry Research** 2014, 53(42), 16196-16203.
- **A.S. Giri and A.K. Golder**, “Fenton, Photo-Fenton, H₂O₂-photolysis and TiO₂ photo-catalysis for Dipyrone oxidation: Drug removal, mineralization, biodegradability and degradation mechanism”, **Industrial Engineering & Chemistry Research** 2014, 53 (4), 1351-1358.
- **A.S. Giri and A. K. Golder**, “Ciprofloxacin degradation from aqueous solution by Fenton oxidation: Reaction kinetics and degradation mechanisms”, **RSC Advance** 2014, 4, 6738-6745.
- **Ch.V. Rao, A.S. Giri, V.V. Goud and A.K. Golder**, “Studies on pH-dependent color variation and decomposition mechanism of Brilliant Green dye in Fenton reaction”, **International Journal of Industrial Chemistry** 2016, 7(1), 71–80.

- *Amit Behra, Ch.V. Rao, R.K. Das, A.S. Giri and A.K. Golder*, “Fabrication and characterization of Ag-doped titania: impact of dye-sensitization, phenol decomposition kinetics and biodegradability index”, **Desalination and Water Treatment** 2016, 57(20), 9488-9497.
- *M. Malika, Ch.V. Rao, R.K. Das, A.S. Giri and A.K. Golder*, “Synthesis of mono- and bi-metal doped TiO₂ and application for dye fragmentation”, **Applied Surface Science** 2016, 368, 316-324.
- *S. Chakraborty, Ch.V. Rao, R.K. Das, A.S. Giri and A.K. Golder*, “Bio-mediated silver nanoparticle: Synthesis mechanism and microbial inactivation”, **Toxicological and Environmental Chemistry** 2017, 99(3), 434-447.
- *A.S. Giri and A. K. Golder*, “Kinetics and mechanisms of Ciprofloxacin cleavage in light assisted Fenton reaction”, **International Journal of Recent Research Science and Technology** 2014, 6(1), 78-82.
- *R.K. Das, A.S. Giri and A.K. Golder*, “Role of Supporting Electrolytes for Hydrogen Peroxide Generation on Graphite Cathode” , **International Journal of Current Engineering Science and Research** 2014, 1(4), 2394-2397.
- *Piyali Ghosh, Ch.V. Rao, A.S. Giri and A.K. Golder*, “Steroid glycosides as potential analytes for Cu-doping on TiO₂ for photocatalytic water treatment”, **Environmental Progress & Sustainable Energy (AIChE)**, (Accepted) (DOI 10.1002/ep).
- *R. Kushwaha, A.S. Giri, S. Garg and S. Bajpai*, “Degradation of Nile blue sulphate dye on to iron oxide nanoparticles: Kinetic study, identification of reaction intermediates and proposed mechanistic pathways”, **Asia-Pacific Journal of Chemical Engineering**, (Accepted) (DOI 10.1002/apj.2200).
- *A.S. Giri and A.K. Golder*, “Ciprofloxacin degradation in photo-Fenton and photo-Catalytic processes: Degradation mechanisms and iron chelation”, **Journal of Environmental Science** (Revised manuscript submitted).
- *A.S. Giri and A.K. Golder*, “Mechanism and identification of reaction byproducts for the degradation of Chloramphenicol drug in heterogeneous photocatalytic process”, **Groundwater for Sustainable Development**, (Revised manuscript submitted).

International Conferences:

- *A.S. Giri and A.K. Golder*, “**Fenton Oxidation Process for the removal of an antimicrobial drug from wastewater**”, 2nd International Conference on Advanced Oxidation Processes (AOP 2012), 5-8th October, 2012, Kottayam, Kerala.
- *A.S. Giri and A.K. Golder*, “**Oxidative degradation of Dipyrone from wastewater using Fenton reagent**”, Indian Chemical Engineering Congress (CHEMCON-2012), 27-30th December, 2012, Dr. B.R. Ambedkar National Institute of Technology, Jalandhar, Punjab, India.
- *A.S. Giri and A.K. Golder*, “**Dynamics of Photo Fenton Process for Dipyrone Degradation and Hydroxyl Radical Quantification**”, International Exhibition and Conference on Water Technologies and Environmental Technology and renewable Energy (OMICS group), 11-14th February, 2013, Bombay Exhibition Centre, Mumbai.
- *A.S. Giri and A.K. Golder*, “**Mechanism and identification of reaction byproducts for the degradation of an antibiotic drug in heterogeneous photo-catalysis using TiO₂**”, International Conference on Frontiers in Chemical Engineering (ICFCE-2013), 9-11th December, 2013, NIT Rourkela, Orissa, India.

- **A.S. Giri and A.K. Golder**, “**Kinetics and mechanisms of Ciprofloxacin cleavage in light assisted Fenton reaction**”, Emerging Challenges and Issues in Environmental Protection, 23-24th January, 2014, Raipur Institute of Technology, Raipur (C.G.), India.
- **R. K. Das, A. S. Giri, and A. K. Golder**, “**Role of supporting electrolytes for hydrogen peroxide generation on graphite cathode**”, International Conference on Civil and Chemical Engineering (ICCCE-2014), 30-31st November, 2014, Warangal, India.
- **Aanchal Mittal, S. Garg, M. Maiti, S. Baipai and A.S. Giri**, “**Evaluation of the Mechanical Properties, Water resistance and Biodegradability of the Crosslinked PVA/ starch composite films reinforced with fibre**”, International Conference on Redefining Textiles Cutting as Technology of the Future 8-10th April, 2016, Department of Textile Technology, National Institute of Technology Jalandhar, India.
- **Partibha, A.S. Giri and S. Garg**, “**Degradation of Dye Mixture from aqueous solution by Homogeneous Photocatalytic Process: Reaction kinetics and Biodegradability Assays**”, International Conference on Redefining Textiles Cutting as Technology of the Future 8-10th April, 2016, Department of Textile Technology, National Institute of Technology Jalandhar, India.
- **A.S. Giri and A.K. Golder**, “**Mechanism and identification of reaction byproducts for the degradation of Chloramphenicol drug in Heterogeneous photo-catalytic Process**”, 23-24th June, 2017, Department of Environmental Science, Tezpur University, Assam, India.

National Conferences:

- **A.S. Giri and A.K. Golder**, “**Degradation of pharmaceutical from wastewater: Oxidative Fenton process**”, Chemical Engineering Congress (CHEMCON-2011), 27-30th December, 2011, Bangalore, India.
- **A.S. Giri and A.K. Golder**, “**Oxidative degradation of Dipyrone from wastewater using Fenton reagent**”, Indian Chemical Engineering Congress (CHEMCON-2012), 27-30th December, 2012, Dr. B.R. Ambedkar National Institute of Technology, Jalandhar, Punjab, India.
- **A.S. Giri and A.K. Golder**, “**Photolytic decomposition of aqueous Ciprofloxacin: Transformation products and mechanisms**”, Indian Chemical Engineering Congress (CHEMCON-2013), 27-30th December, 2013, ICT, Mumbai, India.
- **Partibha, A.S. Giri and S. Garg**, “**Removal of Dye Mixture from Wastewater using Fenton’s Process**”, Advances in Chemical and Environmental Engineering, April 22-23, 2016, Department of Chemical Engineering, National Institute of Technology Jalandhar, India.
- **A.S. Giri and A.K. Golder**, “**Decomposition of drug mixture in UV-photolysis: Evolution of inorganic ions and toxicity assay**”, Chemical Engineering Congress (CHEMCON-2015), 27-30th December, 2015, IIT Guwahati, India.
- **Pratibha, J.K. Ratam, A.S. Giri and S. Garg**, “**A comparative study on oxidation of reactive model dyes mixture by Advanced Oxidation Processes: Reaction kinetics and biodegradability assay**”, Chemical Engineering Congress (CHEMCON-2016), 27-30th December, 2016, Anna University, Chennai, India.

Symposium/ Workshop/ Short-term Courses:

- **A.S. Giri and A.K. Golder**, “**Degradation of Dipyrone in water by photo-assisted Fenton reaction: treatment of solid waste and toxicity study**”, presented in RECYCLE-2014 in Civil Engineering Department, 6th April, 2014, IIT Guwahati, Assam, India.

- **A.S. Giri and A.K. Golder**, “**Degradation of dipyrone in water by heterogeneous photo catalytic reaction: Degradation mechanism and reaction pathways**”, presented in Reflux-2.0 in Chemical Engineering Department, 29-30th March, 2014, IIT Guwahati, Assam, India.
- **A.S. Giri and A.K. Golder**, “**Degradation of Dipyrone in water by heterogeneous photo catalytic reaction: Degradation mechanism and reaction pathways**”, presented in Reflux-1.0 in Chemical Engineering Department, 27-29th March, 2013, IIT Guwahati, Assam, India.
- **A.S. Giri and A.K. Golder**, “**The fate of Chloramphenicol during degradation from wastewater using Fenton oxidation process**”, Presented in an one day symposium on ‘environment and us’ on World Environment Day, IIT Guwahati, Assam, India, 5th June 2012, Technical Session 2, Poster 2A (2012).
- Was involved in QIP-2013, “**Advanced Chemical Process Design**” held at IIT Guwahati Chemical Engineering Department (8th -12th July 2013).
- Was involved as an organizing committee in ISTE Engineering Education Congress and National Seminar on Sustainability of Engineering Education, March 26-27, 2015, Department of Chemical Engineering, National Institute of Technology Jalandhar, India.
- Was involved as an organizing committee in Industry Institute Interaction Programme, March 05-06, 2016, Department of Chemical Engineering, National Institute of Technology Jalandhar, India.
- Was involved as an organizing committee in Advances in Chemical and Environmental Engineering, April 22-23, 2016, Department of Chemical Engineering, National Institute of Technology Jalandhar, India.

R&D Project (s):

- DST-SERB sponsored: “Development of an Ag/CoNP-graphite Nanomaterial as virus DNA sensing platform”.

PI: Dr. Animes Kumar Golder (IIT Guwahati)

Co-PI: Dr. Ardhendu Sekhar Giri

(Durgapur Institute of Advanced Technology and Management)

Present and Positions Held:

- **Assistant Professor:** Durgapur Institute of Advanced Technology and Management, March 2018-present
- **Assistant Professor (on contract):** Dr. B. R. Ambedkar National Institute of Technology Jalandhar, January 2015 - June 2017

Professional Affiliation (s):

- Life Member of Indian Institute of Chemical Engineers (IChE), (LM – 0529), India
- Member of Society of Environmental Chemistry and Allied Sciences (LM No. S-105) of School of Environmental Sciences, Mahatma Gandhi University, Kottayam, Kerala, India.

Awards and distinctions:

- National Doctoral Fellowship from 2009-2013 under MHRD.
- Awarded for the best Paper Presentation in International Conference on Frontiers in Chemical Engineering (ICFCE-2013), 9-11th December, 2013, NIT Rourkela, Orissa, India.

- Awarded for the best Oral Presentation in Chemical Engineering Department, 29-30th March, 2014, IIT Guwahati, Assam, India.

Reviewer of the Journal:

- Environmental Progress and Sustainable Energy, AIChE
- Chemical Engineering Journal, Elsevier
- Analytical Methods, Royal Society of Chemistry
- Chemosphere, Elsevier

Other Activity:

- Exam coordinator (July 2015 to May-2017), NIT Jalandhar

Students Guided:

- No. of B.Tech students guided as co-PI: 06 (completed)
- No. of M.Tech students guided as co-PI: 01 (completed)

Courses:

PG Course (s)

Analytical Methods
Advanced Separation Process
Fertilizer Technology
Petroleum Refinery Engineering

PG Laboratory

Analytical Techniques in Chemical Engineering Lab

UG Course (s)

Mass Transfer Operation
Hydrocarbon Engineering
Environmental Engineering
Petrochemical Engineering
Allied Chemical Technology

UG Laboratory

Heat Transfer Laboratory
Energy Technology Laboratory
Chemical Technology Laboratory