



## ARCHANA MISHRA

Research Scientist, Macro Oceans Inc., USA

PhD (Indian Institute of Technology, Roorkee) MTech, BTech

Contact number: +1-3098077730

E-mail: [archiesrm@gmail.com](mailto:archiesrm@gmail.com)

Address: Davis, California (USA)

---

### PROFESSIONAL SUMMARY

- A multitasking Biotechnologist with expertise in Bioprocess Engineering, excellent at juggling multiple tasks and working under pressure.
- Broad experiences include Second generation ethanol production, Fermentation Technology, Biofuel/Biorefineries, Bioprocess Engineering, and Enzyme Technology.

---

### SKILLS

- **Technical Skills:** Fermentation process developments, Bioreactor operations, 2G ethanol, HPLC, GC-FID, Design of Experiments, SEM, FE-SEM, XRD, FTIR, ICP-MS, TGA
- **Software Packages:** Design Expert, Chem Draw, Sigma plot, Origin, GraphPad Prism, Windows Operating System, Mac OS, Microsoft Office
- **Language:** English (S/R/W); German (R/W); Hindi (S/R/W)

---

### EDUCATION

1. Ph.D. (Biotechnology/Biochemical/Bioprocess Engineering), 2019, Indian Institute of Technology, Roorkee, India
2. M. Tech (Pulp & Paper Engineering), 2012, Indian Institute of Technology, Roorkee, India, CGPA: 3.16/4
3. B. Tech (Biotechnology), 2010, SRM University, India, CGPA: 3.64/4

---

### CURRENT ROLE & EXPERIENCES

1. **Research Scientist (Macro Oceans Inc., California, USA)**
  - Seaweed-based Biorefinery and Products development
2. **Project Associate, Bioprocess Engineering (The Energy and Resources Institute, New Delhi)**
  - Pilot-scale production of Bio-fertilizers and Nano-fertilizers
  - 1000 L Bioreactor facility set-up at TERI, Gwal Pahari, Gurugram, India
  - Submitted a project entitled “Development of circular economy based biorefinery process for production of various nanoenabled agri input products from rice straw” to DST nanomission call
3. **Assistant Director (Center for Renewable Energy and Sustainable Development, VIKALP, New Delhi)**
  - Grants generation for the center in Bioenergy and waste management research area
  - Projects management related to the Bioenergy and waste management research area

- Submitted a project proposal on “Microalgae-mediated wastewater reclamation with bio-oil and biogas production: a sustainable approach” to “WTI Call-Water Energy Food Health Nexus” (Temporary Registration No.: TPN/33386)

#### 4. *Bioethanol production by fractional hydrolysis and co-culture fermentation process (Ph.D., IIT Roorkee)*

- I have developed a novel technique called as "fractional hydrolysis" for the maximum recovery of soluble pentose and hexose sugars separately, direct from lignocellulosic feedstock with minimum toxic products generation.
- The technique was tested by exploring various lignocellulosic feedstocks and inorganic acids in a fractional hydrolysis column.
- Various co-culture fermentation techniques and bioprocess strategies were tried to maximize sugar conversion into ethanol and increase ethanol productivity using *C. shehatae*, *P. stipitis* and *Z. mobilis* and *S. cerevisiae*.

#### 5. *Bioethanol production from mixed waste using fungi (9-months for M.Tech Dissertation, IIT Roorkee).*

#### 6. *Conversion of lignocelluloses into fermentable sugar (3-months for M.Tech Project, IIT Roorkee)*

#### 7. *Polymer coated specialty paper (2-year non-credit project during M. Tech, IIT Roorkee)*

#### 8. *Molecular characterization in search of novel chromium reducing bacterial species from tannery effluents (6-month B. Tech Project, SRM University, Chennai).*

## ACCOMPLISHMENTS

### *Publications*

1. Dhanya BS<sup>1</sup>, **Mishra A**<sup>1</sup>, Chandel AK, Verma M. Development of sustainable approaches for converting the organic waste to bioenergy. *Science of the Total Environment* 2020; 138109.
2. **Mishra A**, Ghosh S. Saccharification of kans grass biomass by a novel fractional hydrolysis method followed by co-culture fermentation for bioethanol production. *Renewable Energy* 2020; 146:750-759.
3. **Mishra A**, Ghosh S. Bioethanol production from various lignocellulosic feedstocks by novel “fractional hydrolysis” technique with different inorganic acids and co-culture fermentation. *Fuel* 2019;236:544-553.
4. **Mishra A**, Kumar A, Ghosh S. Energy assessment of second generation (2G) ethanol production from wheat straw in Indian scenario. *3 Biotech* 2018;8:1422.
5. **Mishra A**, Ghosh S. Bioethanol production from co-culture fermentation using *Candida shehatae* and *Zymomonas mobilis* from kans grass biomass. *Journal of Fundamentals of Renewable Energy and Applications* 2018;8:50.
6. **Mishra A**, Ghosh S. Investigating the effect of fractional hydrolysis process on different lignocellulosic biomasses for bioethanol production. Under review in “Fuel”.
7. **Mishra A**, Ghosh S. Development of multi-step successive glucose feeding co-culture system (*Scheffersomyces shehatae* and *Zymomonas mobilis*) for bioethanol production from kans grass biomass. Under review in *Journal of Industrial Crops and Products*.
8. **Mishra A**, Ghosh S. Key Pretreatment Technologies for an Efficient Bioethanol Production from Lignocellulosics. *Advances in Biofeedstocks and Biofuels* Vol. 1 (55–83); © 2016 Scrivener Publishing LLC.
9. **Mishra A**, Ghosh S. A perspective on Current Technologies used for Bioethanol Production from Lignocellulosics. *Advances in Biofeedstocks and Biofuels* Vol. 2, (25–66); © 2016 Scrivener Publishing LLC.
10. **Mishra A**, Mishra NC, Sharma Y. Bioethanol Production from Mixed Wastes using *Trichoderma viride*. *Indian Res. J. Genet. & Biotech* 2013;5(2):111-116.
11. **Mishra A**, Singh AK. Molecular characterization in search of novel chromium reducing bacterial species from tannery effluent. *International Journal of Research in Biological Sciences* 2014;4(1):25-30.

### *Conferences & Presentations*

1. Archana Mishra and Sanjoy Ghosh “Bioethanol production from co-culture fermentation using *Candida shehatae* and *Zymomonas mobilis* from kans grass biomass” in 9<sup>th</sup> Annual Congress and Expo on Biofuel and Bioenergy, Dubai, UAE.
2. Archana Mishra and Sanjoy Ghosh “Saccharification of Kans grass biomass by fractional hydrolysis process using various

inorganic acids” in BESCON-2017, NSIT, New Delhi (India).

3. Archana Mishra and Sanjoy Ghosh “2G ethanol production by a novel fractional hydrolysis technique and cofermentation process” in BESCON-2017, NSIT, New Delhi (India).
4. Archana Mishra, Kartik Gehlot and Sanjoy Ghosh “Bioethanol production by fractional hydrolysis and cofermentation” in “Bioenergy Urja-Utsav-2017” to represent DBT-Pan IIT work organized by MoPNG, Pune (India).
5. Archana Mishra, Sneha Khalkho and Sanjoy Ghosh “Estimation of inhibitory compounds tolerance levels of *Zymomonas mobilis* and *Pichia stipitis*” in Bioprocessing India-2016, CIAB, Mohali (India).
6. Archana Mishra, N.C. Mishra, and Sanjoy Ghosh “Bioethanol production from mixed wastes by fungi” in “Genesis-13”, HBTI, Kanpur (India).
7. Archana Mishra, and N.C. Mishra “Conversion of pretreated rice straw into fermentable sugars” in BIOSPARKS-2012, JNU, New Delhi (India).
8. Archana Mishra, and N.C. Mishra “Optimization of the process of conversion of lignocellulosic materials into fermentable sugars” in BSD-2012”, Heritage institute of Technology, Kolkata (India).
9. Archana Mishra, and Akanksha Singh “Role of Radioactive Protectors in experimental medicine” in RREM-09”, Karunya University, Coimbatore (India).
10. Archana Mishra, Amit Kumar Singh and Akanksha Singh "ARTIFICIAL SKIN" in COGNIZANCE-09” IIT Roorkee (India).

---

## TEACHING ASSISTANTSHIP, TRAINING & INTERNSHIP

---

- 6 years during Ph.D & 2 years during M. Tech
- Production & formulation of bioagents for the control of diseases and insects (1 month, IIT-BHU, India).
- Professional online training course in SAS (6 weeks, Zecruit Global Inc., USA)

---

## HONORS, ACTIVITIES & MEMBERSHIP

---

- Received “International Inspirational Women Award-2020 under the category “Best Woman Scientist in Biotechnology” at Noida, UP (India)”
- Qualified National Level Examination of Graduate Aptitude Test Engineering-2010.
- Received MHRD-GOI junior and senior research fellowship during M. Tech (2 years) and Ph.D. (6 years).
- Received International Travel Grants from IIT Roorkee to attend “9<sup>th</sup> Annual Congress and Expo on Biofuel and Bioenergy” during April 16-17, 2018 in Dubai, UAE.
- Organizing committee member of “INDO-US Bilateral Symposium on Next Generation Biologically Synthesized Nanofertilizers for Seed Coating and Foliar Application” in The Energy and Resources Institute, India (5<sup>th</sup>-7<sup>th</sup> September 2019) & “Nano for Agri 2019” conference in Aerocity, New Delhi, India (21<sup>st</sup>-22<sup>nd</sup> November).
- Participated in 3-day event “Global BioIndia-2019” in Aerocity, New Delhi, India.
- Volunteered workshop on ‘Hands-On-Training on Modern Techniques in Biotechnology’ (07.01.2013 to 12.01.2013) organized by IIT Roorkee and DBT, India & one-day symposium on Foundation day celebration of Biological Engineering Society (BES) on November 24, 2017 organized by IIT Roorkee (India).
- Organized & Volunteered many national level cultural & technical events at undergraduate level (Coordinator of BIOART-08, AARUSH-09 & volunteer in AARUSH-07, AARUSH-08, and MILAN-08) held in SRM University, Chennai (India).
- Participated in seminar on "Recent advances in Environmental Biotechnology" (2008) and "International level career development program for Biological students BIOCATALYST -08" held in SRM University, Chennai (India).
- Certificate course in yoga (2006) as a part of personality development conducted by SRM University for 6 months in collaboration with "women spiritual educational trust, Gudvancheri”, Chennai (India).
- Founder member of Biological Engineering Society (BES) & Associate member of NBAS (National Biological Association of Students) (2007).

---

XXXXX

---