

## Cover Letter

Dear Sir/Madam

I am submitting my resume for the post of assistant professor in biotechnology at your esteemed university. Currently I am working at BAE lab, University de Perpignan, France as a postdoctoral researcher. I am contributing my knowledge towards the development of biosensors for detection of pharmaceutical contaminants in wastewater using electrochemical techniques.

In the past, I have worked as a visiting researcher in Sabanci University Nanotechnology Research and Application Centre (SUNUM) Istanbul, Turkey with Prof. Yasar Gurbuz, where I was a team member for the development of a field portable point-of-care biosensor device for detection of cardiac and cancer biomarkers in human serum. I have worked with real patient clinical samples for cardiac and cancer biomarkers. Moreover, I also worked towards the development of a microfluidics based platform for detection of biomarkers in human serum. I also have gained some preliminary training on nanofabrication and 100 and 1000 class clean room facilities (lithography).

I obtained my Ph. D. in the area of biosensors; thesis entitled “Novel Biosensor Techniques for Analysis of Food Contaminants and Clinical analytes” under Prof. Sunil Bhand in July 2015 from Birla Institute of Technology and Science (BITS) Pilani, Rajasthan, India. My doctoral work was mainly focused on development of biosensing techniques for detection of urea and antibiotic residue in milk and detection of bacteria in water. I also have developed biosensors for urea detection in urine samples and developed various bioassays for analysis of antibiotics and pesticides.

I can offer my expertise in research oriented teaching, lab setup, practical classes and laboratory training, and generating research grants. I have acquired expertise in immobilization and bio-functionalization of different biomolecules (enzymes, antibodies, and DNA aptamers), surface modification of various metal surfaces (Gold, Silver, Zinc and Silicon), electrochemical measurements and characterization of lab-on-chip platforms, and fabrication of microfluidics based platforms. I can demonstrate excellent written and verbal communication skills with writing sponsored projects, research articles and formulate patent claims.

I am willing to serve your institution by the skills I have acquired during past few years in the sphere of Biotechnology, Nanotechnology and Bio-MEMS. I am ready to take challenges and eager to serve your organization with immense pleasure.

Sincerely,

Geetesh K. Mishra

# CURRICULUM VITAE

**Name:** Geetesh Kumar Mishra, Ph.D.

**Date of Birth:** 26/12/1984

**Nationality:** Indian

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## **Motivation:-**

For me, teaching provides an opportunity for continual learning and growth. One of my hope as a teacher is to promote passion of learning in my students, as I share my own passion for learning with them. I feel there is a need for compassionate, strong, and dedicated individuals who are excited about doing research. In our competitive society, it is important for students to not only receive a solid research based education, but to work with someone who is aware of and sensitive to their individual needs. I am such a person and will always strive to be the best researcher that I can be.

## **Research Interest:-**

My research interest is focused on the development of point-of-care, portable and label-free biosensor and nano-sensor devices for detection of biomarkers and bio-molecular interactions in clinical and environmental samples. I have been working for the detection of various biomarkers for cancer and cardiovascular diseases, urea, antibiotic residue, and bacterial contamination in different matrices using various biosensing techniques. Being a microbiologist, I am exploring different avenues for interdisciplinary research in combination with bioanalytical chemistry, biotechnology, nanotechnology, and bio-MEMS techniques.

## **Qualifications: -**

- 1. Ph. D. in Biosensors** from BITS Pilani, India under the supervision of Prof. Sunil Bhand, Department of Chemistry. **Title of the Thesis:** “Novel biosensor techniques for analysis of food contaminants and clinical analytes” (2015).
- 2. M.Sc. in Microbiology** from Pt. Ravishankar Shukla University, Raipur (Chhattisgarh,

C.G.), India (2007).

3. **B.Sc. in Microbiology** from Devi Ahilya University, Indore (M.P.) India (2005)
4. Higher Secondary from C.G. Board of Secondary education Raipur (Chhattisgarh, C.G.) India (2002).

### **Work Experience:-**

- Currently working at BAE Lab, University de Perpignan via Domitia, Perpignan, France as a postdoctoral researcher since May 15, 2017
- Worked at Sabanci University Nanotechnology research and Application Centre (SUNUM), Istanbul, Turkey as a Visiting Researcher from October 1, 2016 to May 12, 2017.
- Worked as postdoctoral researcher at Faculty of Engineering and Natural Sciences (FENS) and SUNUM in Sabanci University, Istanbul, Turkey from December 1, 2015 to September 30, 2016.
- Project Fellow (Transitional postdoc) under Centre of Research Excellence in Waste, Water and Energy Management (CORE WWEM) at BITS, Pilani-K. K. Birla Goa Campus since October 2014 to November 2015.
- Research Associate (National Agricultural Innovation Project, a consortium based project sponsored by ICAR, India, and the World Bank at BITS Pilani-K. K. Birla Goa Campus since July 2011 to June 2014.
- Senior Research Fellow (National Agricultural Innovation Project, a consortium-based project sponsored by ICAR, India, and the World Bank at BITS Pilani-K. K. Birla Goa Campus since March 2009 to June 2011.
- Worked as a Microbiologist in BSR-Apollo Hospitals Bhilai C.G. (March 2008- Feb 2009), India.
- Worked as a trainee technician in Apollo Hospitals Bilaspur, C.G. (June 2007- Nov. 2007), India.
- Worked as a project intern at Apollo Hospitals Bilaspur, C.G., India (May to July 2006).

### **Teaching Involvement:-**

My teaching experience involves lab work and teaching to the under graduate and Master students during my Ph.D. at BITS, Pilani K.K. Birla Goa Campus, Goa, India. I have also been working closely with under graduate/ M.Sc. students to help them achieve their project/research objectives in biosensors and biochemistry.

### **Award and Honors:-**

1. 2<sup>nd</sup> Prize in poster presentation at Indo- UK International Workshop on Advanced Materials and Their Applications in Nanotechnology (AMAN 2014).
2. Research Associate fellowship by ICAR, New Delhi, India in July 2011.
3. Senior Research Fellowship from ICAR New Delhi, India in March 2009.

### **Scientific Publications:-**

1. Geetesh K. Mishra, Rupesh K. Mishra, Sunil Bhand, “*Flow injection analysis biosensor for urea analysis in adulterated milk using enzyme thermistor*”, **Biosensors and Bioelectronics**.2010, 26 (4): 1560-1564 (**IF-7.5**).
2. Geetesh K. Mishra and Sunil Bhand “*FIA-EQCN biosensor for analysis of sulphadiazine residues in milk*” **IEEE Proceedings ICST 2012** , 18-21 Dec. 2012 Page(s): 672 - 676 DOI: 10.1109/ICSensT.2012.6461762
3. Rupesh K. Mishra, Geetesh K. Mishra, Dharma Teja V, Bengt Danielsson, Sunil Bhand “*A visual colorimetric dual readout bioassay for determination of pesticide residues in drinking water*” **Chemical Sensors** 2013, 3 : 12.
4. Geetesh K. Mishra, Atul Sharma, Kanchanmala Deshpande, Sunil Bhand “*Flow Injection Analysis biosensor for urea analysis in urine using Enzyme Thermistor*”, **Applied Biochemistry and Biotechnology**. 2014, 174, 998-1009, DOI 10.1007/s12010-014-0985-0 (**IF 1.8**).
5. Geetesh K. Mishra and Sunil Bhand “*Biosensor for urea analysis in adulterated milk*” (Special Volume National Agricultural Innovation Project) **Indian Farming** 64 (2):115-117 May 2014.
6. Geetesh K Mishra, Gautam Bacher, Utpal Roy, Sunil Bhand “*A label free impedemetric immunosensor for detection of Escherichia coli in water*” **Science Letters Journal** (2015) 4:76.

7. Geetesh K. Mishra, Atul Sharma and Sunil Bhand “*Ultrasensitive detection of streptomycin using FIA-EQCN Biosensor*” **Biosensor and Bioelectronics** 2015, 67:532-539, DOI: 10.1016/j.bios.2014.09.033 (**IF-7.5**).
8. Pranali P. Naik<sup>#</sup>, Geetesh K. Mishra<sup>#</sup>, Bengt Danielsson and Sunil Bhand (<sup>#</sup>Authors with equal contribution) “*Android integrated urea biosensor for public health awareness*” **Sensing and Bio-Sensing Research** (2015) 3:12-17. Elsevier, doi:10.1016/j.sbsr.2014.11.001.
9. Rupesh Mishra, Akhtar Hayat, Geetesh K. Mishra, Gaëlle Catanante, Vinay Sharma, and Jean Louis MARTY “*A novel colorimetric competitive aptamer assay for lysozyme detection based on superparamagnetic nanobeads*” **Talanta**, Volume 165, 1 April 2017, Pages 436–441 (**IF-4.5**).
10. Geetesh K. Mishra, “*Microbes in Heavy Metal Remediation: a Review on Current Trends and Patents*” **Recent Patents on Biotechnology**, 2017, Vol. 11, No. 2.
11. Sunil Bhand and Geetesh K. Mishra “*Electrochemical Quartz Crystal Nanobalance (EQCN) Based Biosensor for Sensitive Detection of Antibiotic Residues in Milk*” **Biosensors and Biodetection, Methods and Protocols, Volume 2**, ISBN: 978-1-4939-6910-4, (Book Chapter).
12. Sajid Rauf; Geetesh K. Mishra; Jahanzaib Azhar; Rupesh Mishra; K.Yugender Goud ; Muhammad Azhar Hayat Nawaz; Jean L Marty. *Carboxylic group riched Graphene Oxide based Disposable Electrochemical Immunosensor for Cancer Biomarker Detection*. **Analytical Biochemistry**, Volume 545, 15 March 2018, Pages 13-19 (**IF 2.33**).
13. Geetesh K. Mishra, Vinay Sharma, Rupesh K. Mishra. *Electrochemical aptasensors toward food and environmental safeguard: Review*, **Manuscript submitted to Biosensors**, Special Issue January 2018 "Electrochemical (Bio)sensors for Environmental and Food Analyses" (**Invited article**).
14. Geetesh K. Mishra, Divya Mahalingam, Javed H. Niazi, Anjum Qureshi, and Yasar Gurbuz “*Detection of a panel of risk biomarkers for cancer and cardiovascular diseases using circular-intradigitated capacitive biosensors*” **Under re-submission stage**.
15. Geetesh K. Mishra, Ashish Pandey, Javed H. Niazi, Anjum Qureshi, and Yasar Gurbuz “*Label Free Capacitive Biosensor for Multiplexed Detection of Cancer and Cardiac Markers*” **Manuscript ready for submission**.

16. Geetesh K Mishra, Rehan Deshmukh, Gautam Bacher, Utpal Roy and Sunil Bhand “A *micro biosensor for label-free detection of Salmonella in water*” **Manuscript ready for submission.**

## **Laboratory Operations and Expertise:-**

### ***Biosensors, Biochemistry, Microbiology and Bioanalytical Chemistry:***

- Well trained in all major basic techniques in the area of biosensors :
  - Quartz Crystal Nanobalance (QCM)
  - Enzyme Thermistor
  - Fluorescence Microscope with CCD
  - Electrochemical impedance systems
  - Micro plate Reader – Fluorescence and Chemiluminescence
  - Multi channel pump
  - Ultra violet spectroscopy
  - Electrochemical work station (CV, DPV, Amperometric technique),
  - Bactec 9050
- Worked in biosafety cabinet, safety level 2, B2
- Working hands on flow based set-up using electrochemical, thermal and piezoelectric techniques.
- Bioassay development for various contaminants and toxins.
- Surface modification of nanomaterials, nanodevices, lab-on-chip platform, enzyme coupling,
- Immobilisation of antibodies and aptamers using various surface modification techniques and SAMs.
- Developed protocols for enzyme immobilization and stabilization.
- Easily handled DNA, enzymes, antibodies and other biomolecules.

- Worked with micro-organism in laboratory and perform different biochemical tests.
- Well-trained in isolation and identification of different bacterial strains.
- Different staining techniques (Grams staining, acid fast staining, fungal staining).
- Kit based serological and immunological tests - RA Factor, CRP, ASO, VDRL, WIDAL, Pregnancy test, HIV, HbsAg, HCV etc.
- Overseeing laboratory operations involving procurement and installation of instruments and developing new methods and validation.

***MEMS, Microfluidics, and Clean room experience:***

- I have experience of working in 1000 and 100 class clean room environment.
- Glove box environment, Spin coating, Etching techniques (dry and wet), Lift-off process.
- Cleaning Process (piranha and degreasing) etc.
- Fabrication of PDMS based microfluidics devices, casting of PDMS gel, cleaning with oxygen plasma and attachment of microfluidics chip to the other intradigitated electrodes based devices.
- Beginner in microfabrication and lithography techniques (Mask aligner and sputtering).

**Conferences and Workshop Attended:-**

1. Oral presentation at National Conference on Nano Functional Materials (NFM2014), BITS, Pilani India, 2014 entitled “A micro biosensor for label-free detection of *Salmonella* in water” Geetesh K Mishra, Gautam Bacher, Utpal Roy, and Sunil Bhand.
2. Presented a poster at Indo- UK International Workshop On Advanced Materials And Their Applications In Nanotechnology (AMAN 2014) Organized by BITS Pilani, KK Birla Goa Campus (May 17- 19, 2014) entitled “Impedometric immunosensor for bacterial detection” Geetesh K. Mishra , Gautam Bacher ,Utpal Roy and Sunil Bhand (2nd prize in poster presentation).
3. Presented a Poster at India-Japan workshop on biomolecular electronics & organic nanotechnology for environmental preservation (IJWBME 2013) organized by DTU New

Delhi, 13-15 December 2013 entitled ‘Flow Injection Analysis biosensor for urea analysis in urine using Enzyme Thermistor’ Geetesh K Mishra, Atul Sharma and Sunil Bhand.

4. Attended the International Conference on Emerging Technologies: Micro to Nano (ETMN 2013) on 23-24<sup>th</sup> February 2013 at BITS Pilani K.K. Birla Goa campus.
5. Attended one-day workshop on IPR at BITS Pilani K.K. Birla Goa campus (2012).
6. Attended two-day’s workshop on IPR management at BITS Pilani-K.K. Birla Goa Campus (2015).
7. Attended a National Conference on Aerobiology at school of Studies in Biotechnology, Pt. Ravishankar Shukla University Raipur. (C.G., India) (2007).
8. Attended a National Conference of the Association of microbiologist of India (AMI) at National Dairy Research Institute, Karnal 13200, (India) (2004).

#### **Abstract accepted in conferences:-**

1. Abstract accepted for poster presentation: Geetesh K. Mishra , Atul Sharma and Sunil Bhand ‘‘Ultrasensitive detection of streptomycin using Flow injection analysis-Electrochemical quartz crystal nanobalance (FIA-EQCN) biosensor’’ 24th Anniversary World Congress on Biosensors, May 27-30, 2014 Melbourne AUSTRALIA.
2. Abstract accepted for poster presentation: P.P. Naik, Geetesh K. Mishra, Bengt Danielsson and Sunil Bhand ‘‘ Android Integrated urea biosensor for public health awareness’’ 24th Anniversary World Congress on Biosensors, May 27-30, 2014 Melbourne AUSTRALIA.
3. Abstract accepted for Oral Presentation: Geetesh K Mishra and Sunil Bhand. FIA-EQCN biosensor for analysis of sulphadiazine residues in milk. Presented at 6th IEEE International Conference on Sensing Technology, Special focus on sensors for agriculture and environmental monitoring ICST 2012, Dec. 18-21, 2012 Kolkata, India.
4. Abstract accepted for poster presentation: Geetesh Mishra, Souvik Pal, Sunil Bhand. Gold Nanoparticle based Optical Biosensor for Monitoring Streptomycin in Milk Samples at 5<sup>th</sup> International Symposium on Recent Advances in Food Analysis (RAFA 2011) 1 – 4, November 2011, Prague, Czech Republic.



5. Abstract accepted for poster presentation: Geetesh K Mishra, Rupesh K Mishra, and Sunil Bhand. Flow injection analysis biosensor for urea analysis in adulterated milk using enzyme thermistor at World Congress on Biosensors, Glasgow, UK, 2010.

**KEY SKILLS:-**

- Strong interpersonal and communication skill.
- Skilled in lab safety, preparation of SOPs, good hands in documentation.
- Good hands in analytical works.
- Can work as individual or as a team member.

**References:**

1. Prof. Yasar Gurbuz

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**2. Prof. Sunil Bhand**

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*I will gladly provide any other supporting information upon request.*

Geetesh K. Mishra, Ph.D.