

PERSONAL INFORMATION



Dr. Murali Mohana Rao, Singuru Ph.D.

Post-Doctoral Research Scientist,
Department of Chemistry,
Tunghai University, Taichung,
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Gender Male | Date of Birth 03-08-1988 | Nationality Indian

THESIS TITLE

*Design and Synthesis of Three-Dimensional DNA Microstructures for
Development of Genotoxicant-Responsive Sensors*

GOOGLE SCHOLAR

(https://scholar.google.com/citations?user=0tgJ_aQAAAAJ&hl=en)

RESEARCHGATE

(<https://www.researchgate.net/profile/Murali-Mohana-Rao-Singuru>)

RESEARCH EXPERIENCE

September 2018 – August 2022

Doctoral Research Scholar (Ph.D.)

Tunghai University (THU), Department of Chemistry under the supervision of **Prof Min-Chieh Chuang**

EDUCATION AND TRAINING

September 2018 – August 2022

Doctoral Research Scholar (Ph.D.)

Full-time Doctoral Research Scholar (Ph.D.)
Tunghai University (THU), Department of Chemistry under the supervision of **Prof Min-Chieh Chuang**
(<https://sites.google.com/site/lebchuang/people?authuser=0>)

September 2008 – August 2013

Master of Science in Chemistry (5 years integrated master of science)

University of Hyderabad, Telangana, India
(<https://uohyd.ac.in/>)

June 2004 – March 2006

Intermediate (Botany, Zoology, Physics, and Chemistry)

Board of Intermediate Education, Andhra Pradesh, India

June 2003– March 2004

Secondary School Certificate (High School)

Board of Secondary Education, Andhra Pradesh, India

Work Experience

August 2014 –
September 2018

Senior Executive (Analytical Research and Development)

Micro Labs Limited
31, Race Course Road,
Bangalore-560 001, India (<http://www.microlabsltd.com/contact>)

July 2013 – July 2014

Associative Lecturer in IIT Chemistry

Sri Chaitanya IIT Academy.
Srinivasa Complex Plot No:79, Seshadripuram Main
Rd, near Fortis Hospital, Malleswaram, Bengaluru,
Karnataka 560020, India

WORK EXPERIENCE

SUMMARY OF EXPERIENCE

- Having research experience of **5 years of Doctoral research experience at Tunghai university** is focused on the Design and Synthesis of Three-Dimensional DNA Microstructures for the Development of Genotoxicant-Responsive Sensors.
- Having research experience of **4 years of industrial experience in the Analytical Research & Development Department in Micro Labs (API) Ltd** is focused on various pharmaceuticals drug analysis by GC, GC-MS, HPLC, and LC-MS.
- Experimental skills in various Optical sensors (Fluorescence, surface plasmon resonance)
- Hands-on experience with SEM, FT-IR, XRD, DLS, Zeta analyzer, Confocal Microscopy, Isothermal titration calorimetry (ITC), circular dichroism (CD) Nanodrop, flow cytometry, and Raman spectroscopy methods and analysis of the results.
- Synthesis of various nanomaterials and characterization by FT-IR, Raman, FESEM, TEM, and XPS techniques.
- Experience in handling various recognition elements like aptamers and antibodies
- Experience in the fabrication of electrodes for biosensor applications.
- Good experience in project execution, technical presentation, and teaching skills.
- Calibration of HPLC, UV, and pH meter.
- Calibrations of GC-FID, GC-ECD, GC-TCD, GC-MS, and analytical balances.
- Performing the Analytical Method validation by GC and HPLC.
- On-time testing of Raw Materials and Finished Products by Instrumental methods.
- Comparison of test results against specifications.
- Analysis of Assay, Related Substances, and Residual solvents by using Gas Chromatography
- To carry out the laboratory investigation in case of any out-of-specification results.
- Good exposure in handling all documentation related to Quality Control.
- Responsible for all activities in the laboratory, including cGLP, documentation, and implementation of Departmental quality system.
- Stability testing of laboratory batches, commercial batches, and other stability samples.
- Review various documents like standard operating procedures, formats, protocols, reports, specifications, etc.
- Development of analytical methods for Related Substances, Content analysis, and absence studies.
- Performing and maintaining documents as per GLP.
- Punctuality and hard work to achieve goals in a career.

RESEARCH INTERESTS

- **Biosensors** (DNA, Aptamers, Enzyme and immunosensors)
- **Wearable-stretchable sensors** (on-body sensors)
- **Electrochemical sensors** (CV, DPV, impedance spectroscopy, and amperometry)
- **Optical sensors** (Fluorescence, surface plasmon resonance)
- **Chemical Sensors** (CNT, Graphene, Metal NPs, Metal oxide NPs, Hybrid nanomaterials)
- **Mycotoxins, Opioids, Organo-phosphates, and explosives** detection
- Food security, food safety, alcoholic beverages, and milk analysis
- **Environmental protection**, heavy metal ions detection
- **CRISPR-based sensors** (Cas9, Cas12, Cas13, and Cas14)
- **Three-dimensional based** (Tetrahedron, DNA microcapsule, Three-way, and Four-way junction)

INTERNATIONAL CONFERENCE PROCEEDINGS

1. Genotoxin-Responsive DNA Capsules for the Detection of Styrene Oxide
Murali Mohana Rao Singuru, Wei-Ching Liao, and Min-Chieh Chuang “2021 **Chemical Society National Meeting**, from March 12 (Friday) - March 14 (Sunday), 2021 at National Central University, Taiwan.
2. Mercury^{II}-Stabilized DNA Capsules for Turn-On Detection of Melamine
Murali Mohana Rao Singuru, Yu-Wen Chen, and Min-Chieh Chuang **2022 ICSS International Conference On Smart Sensors** meeting, from Oct 22 (Saturday) - Oct 23 (Sunday), 2022 at National Chung Hsing University (NCHU), Taiwan.
3. Sulphide-functionalized ITO for electrochemical catalysis and analysis of methylene blue towards homogeneous SNP detection
Wan-Chen Ji, Murali Mohana Rao Singuru, and Min-Chieh Chuang **2022 ICSS International Conference On Smart Sensors** meeting, from Oct 22 (Saturday) - Oct 23 (Sunday), 2022 at National Chung Hsing University (NCHU), Taiwan.

ACHIEVEMENTS

1. Secured all India 6th rank (O.B.C) in the University of Hyderabad (integrated exam entrance)
2. Participated in Training programmers for Advance biotechnology techniques in 2006 conducted by Helini Biomolecules Chennai India.
3. Participated in the academic lectures and interactive sessions at the “Second Science Conclave: A Congregation of Nobel Laureates “organized by the Indian Institute of Information Technology.

PUBLICATIONS

- 1) **Murali Mohana Rao Singuru**, Yu-Chieh Liao, Gloria Meng-Hsuan Lin, Wei-Tzu Chen, Yu-Hsuan Lin, Ching Tat To, Wei-Ching Liao, Chun-Hua Hsu, Min-Chieh Chuang
Engineered multivalent DNA capsules for multiplexed detection of genotoxins via versatile controlled release mechanisms
Biosensors and Bioelectronics (2022), 216, 114608 (IF 12.454)
(<https://www.sciencedirect.com/science/article/abs/pii/S0956566322006480>)

- 2) **Murali Mohana Rao Singuru**, Wei-Ching Liao, Min-Chieh Chuang
Genotoxin-responsive DNA capsules for the detection of styrene oxide
Sensors and Actuators B: Chemical (2021) 349, 130776 (IF 9.221)
(<https://www.sciencedirect.com/science/article/abs/pii/S0925400521013447>)

- 3) Hui-Ju Chao, Zih-Syun Lin, **Murali Mohana Rao Singuru**, Min-Chieh Chuang
Sustainable oxygen-evolving electrode via in situ regenerative deposition of hexahydroxyiridate (IV)-adsorbed IrOx nanoparticles
Electrochimica Acta (2021) 383, 138291 (IF 7.336)
(<https://www.sciencedirect.com/science/article/abs/pii/S0013468621005818>)

- 4) **Murali Mohana Rao Singuru**, Sin-Cih Sun, Min-Chieh Chuang
Advances in oligonucleotide-based detection coupled with fluorescence resonance energy transfer
TrAC Trends in Analytical Chemistry (2020) 123, 115756 (IF 14.908)
(<https://www.sciencedirect.com/science/article/abs/pii/S0165993619304893>)

REFERENCES

1. **Prof. Min-Chieh Chuang, Ph.D.** (Research Supervisor)
Professor
(<https://sites.google.com/site/lebchuang/people?authuser=>)
Laboratory of Electrochemistry and Bioelectronics (LEB)
<http://leb.thu.edu.tw>
Department of Chemistry
Tunghai University
No. 1727, Sec. 4, Taiwan Blvd.
Taichung 40704, TAIWAN
Phone: +886-4-23590121 ext 32218
E-Mail: mcchuang@thu.edu.tw
2. **Prof. Wei-Ching Liao, Ph.D.** (Research mentor)
Professor (<https://liaowc.wixsite.com/site>)
The Institute of Biochemistry and Molecular Biology,
National Yang-Ming University,
Taiwan
Phone: +886-2-28267124
E-mail: wcliao@nycu.edu.tw
3. **Dr. Vikas D. Ghule, Ph.D.** (Research mentor)
Assistant Professor
(http://www.nitkkr.ac.in/comp_faculty_details.php?idd=125)
Department of Chemistry,
National Institute of Technology Kurukshetra,
136 119, Haryana
Phone: +91-1744-233-512
E-mail: gvd@nitkkr.ac.in, ghule.vikas@gmail.com

DECLARATION

I hereby declare that the above furnished details are true to the best of my knowledge and belief.

Yours faithfully,

PLACE: Taiwan

Dr. Murali Mohana Rao Singuru, Ph.D.