

Dr. KIRUTHIKA RAMANY

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ACADEMIC BACKGROUND

- Doctor of Philosophy (PhD)

Anna University Chennai, India | June 2017 – Aug 2023

- Master of Engineering (M.E.) - VLSI Design

Sri Sivasubramaniya Nadar College of Engineering,
Chennai, India | 2015 - 2017

- Bachelor of Technology (B.Tech) –

Electronics and Communications Engineering

Rajiv Gandhi College of Engineering and Technology,
Puducherry, India | 2011 – 2015

PATENTS INFO

1. PATENT GRANTED

- Invention Title: Multifunctional Sensor for the Detection of Toxic Gases and Pipeline Leakages in the Sewage System
- Patent Number ; DOF: 453646 ; 01/11/2020
- Inventors: Kiruthika Ramany, Radha Shankararajan, Kirubaveni Savarimuthu

2. PATENT APPROVED

- Invention Title: A metal Oxide Sensor for detection of Urea in Milk.
- Inventors: Shyamala Venkatachalapathi, Radha Shankararajan, Kiruthika Ramany
- Patent Type/ Origin: Utility Patent/India

KEY COMPETENCIES

- Hands on experience in the synthesis of metal oxide-based nanostructures.
- Hands on experience in the fabrication of multifunctional piezoelectric NEMS and MEMS sensors
- Property tailoring methodologies to achieve desired properties (structural, morphological, optical and electrical properties)
- Hands-on experience in Gas sensing and vibration sensing unit.

LANGUAGE PROFICIENCY

- English – Professional Proficiency
- Tamil – Lingual

“Passionate researcher with 7+ years of research experience in nanostructured metal oxide-based sensors applications with a proven record of patents and international publications. Strong collaborative abilities with significant levels of satisfaction and ratings from the supervisor and the head in developing eco-friendly metal oxide-based sensors for multifunctional applications. A research addict exploring ways to grow as proficient research professional.”

RESEARCH EXPERIENCES

- CSIR- Direct Senior Research Fellow (SRF) | Nov 2020 – May 2023
Funded by Council of Scientific and Industrial Research - Human Resource Development Group (CSIR-HRDG), Delhi, India.

Experimentally investigated and evaluated the performance of the eco-friendly metal oxide based multifunctional piezoelectric sensor developed using the low-temperature methodology for sewage system application by various property tailoring methodologies.

- SSNCE - Junior Research Fellow (JRF) | Mar 2018 – Mar 2020
Funded by Sri Sivasubramaniya Nadar College of Engineering, Chennai, India.

Fabricated and experimentally analyzed metal oxide-based sensor for gas and acceleration sensing applications.

ACCOMPLISHMENTS

- Awarded “INNOVATIVE RESEARCHER IN MULTIFUNCTIONAL SENSORS” by IJRULA awards (2019-20), sponsored by the International Research Councils.
- Won “BEST PAPER PRESENTATION AWARD” for the presentation entitled “Investigation of Zinc Oxide Nanostructures for Multifunctional Applications” presented at Research Scholars day-2020 at SSNCE, Chennai, India.
- Won “BEST PAPER AWARD” for the paper entitled “Fabrication and Experimental analysis of CuSCN coated ZnO nanorods for piezoelectric accelerometer application” presented at the International Conference on Intelligent Digital Transformation - 2019 at Sri Ramakrishna Engineering College, Coimbatore, Tamil Nadu.
- Internal funding amount of INR 25,000 was approved for the PG academic project entitled "Fabrication of ZnO nanorod nano-generator by concentrating on the screening effect reduction and also to make it a self-powered active gas sensor " by SSNCE, 2018.
- Won 1st position in paper presentation in National Symposium held at CARE group of Institution (2015)-Trichy, India
- Received certification of Appreciation for participation in various paper presentation event in the year 2014-2015 at RG CET, Pondicherry.

RESEARCH INTERESTS

- **Metal Oxide-based nanomaterials**
- **Nano and microstructures**
- **Fabrication of thin films**
- **Adulterant detection sensors (melamine and Urea in milk)**
- **MEMS and NEMS based sensors**
- **Piezoelectric sensors (Accelerometers)**
- **Biosensors (lung cancer detection)**
- **Gas Sensors (Toxic and VOCs)**
- **Energy Harvesting applications**

CORE COMPETENCIES

- **Time Management and Results driven**
- **Quantitative and Qualitative Analysis**
- **Teamwork and Collaborative learner**
- **Ambitious and Career focused**
- **Project Management and Documentation**
- **Passionate Academic writing**

EXTRA CURRICULAR ACTIVITIES AND OTHER INITIATIVES

- **Participated in Paper Presentation** event at Gravitass'14 international knowledge Carnival at VIT university-Vellore.
- **Active participation in Smile Foundation** for the betterment of underprivileged children at school for 4 years.
- **Participated and presented a case study** on "Quality Circle Awareness Day" organized by IGCAR Kalpakkam.
- **Cleared 46th and 47th Junior UN Information Tests** conducted all over India by the Council for UN information, a wing of USO in 2003 and 2004 respectively.
- **Special prize** for the best user of the library at school for 4 years.
- **Class monitor, House prefect, House captain and school captain in secondary and higher secondary.**
- **President** of English club, Science club and social club at School.
- **Team leader** in various school projects, and other co-curricular group activities.

INTERNATIONAL PUBLICATIONS

- [1] **Kiruthika Ramany**, Radha Shankararajan, Kirubaveni Savarimuthu, Shyamala Venkatachalapathi, Iyappan Gunasekaran, Govindaraj Rajamanickam and Ramasamy Perumalsamy, "Experimental investigation of performance tailoring of the multifunctional sensor using transition metal (Fe) doped ZnO nanorods synthesized via a facile solution-based method", **Nanotechnology**, vol. 33, no. 3, pp. 035713, 2021. (IF: 3.874)
- [2] **Kiruthika Ramany**, Radha Shankararajan, Kirubaveni Savarimuthu, Iyappan Gunasekaran, Govindaraj Rajamanickam, Santhosh Narendhiran, and Ramasamy Perumalsamy, "Experimental analysis of transition metal (Ni-V) co-doped ZnO nanorods for piezoelectric accelerometer application", **IEEE Transactions on Nanotechnology**, vol.19, pp. 728-735, 2020. (IF: 2.967)
- [3] **Kiruthika Ramany**, Radha Shankararajan, Kirubaveni Savarimuthu, Shyamala Venkatachalapathi, Gayathri Sivakumar, Devipriya Murali, Iyappan Gunasekaran "Experimental verification of mixed metal oxide-based sensor for multiple sensing application", **Materials Letters**, vol.301, pp.130248,2021. (IF: 3.423)
- [4] **Kiruthika Ramany**, Radha Shankararajan, Kirubaveni Savarimuthu, Priyadharshini Elumalai, Govindaraj Rajamanickam, Santhosh Narendhiran and Ramasamy Perumalsamy, "Comparative study on hydrothermally synthesized undoped and Vanadium doped Zinc Oxide nanorods for nanoelectromechanical systems low-frequency accelerometer application" **Thin Solid Films**, 680, 2019, 60-66. (IF: 2.183)
- [5] **Kiruthika Ramany**, Radha Shankararajan, Kirubaveni Savarimuthu, Priyadharshini Elumalai, Govindaraj Rajamanickam, Santhosh Narendhiran and Ramasamy Perumalsamy "Experimental Study of Different Vanadium Dopant Concentrations in ZnO Nanorods for a Low Frequency Piezoelectric Accelerometer." **Journal of Electronic Materials**, 48, 2019, 5310-5322. (IF: 1.938)
- [6] **Kiruthika Ramany**, Radha Shankararajan, Kirubaveni Savarimuthu, "Development of eco-friendly dual functional sensor (TiO₂ doped ZnO nanorods) operating at room temperature using a facile wet chemical approach for application in the sewage system", **IEEE Transactions on Nanotechnology**,2022. (IF: 2.967)
- [7] **Kiruthika Ramany**, Radha Shankararajan, Kirubaveni Savarimuthu, Shyamala Venkatachalapathi ,Iyappan Gunasekaran, "Experimental validation of TiO₂ shielded ZnO nanorods synthesized via low temperature solution-based method for sewage system (Gas (CO and CH₄) and acceleration sensing)", **Journal of Vibration Engineering & Technologies**, 2022.(IF: 2.333)
- [8] Sudha Murugesan, Radha Shankararajan, Kirubaveni Savarimuthu, **Kiruthika Ramany**, Govindaraj Rajamanickam, Santhosh Narendhiran and Ramasamy Perumalsamy, "Effect of Precursor

Concentration on Structural, Morphological, and Optical Properties of ZnO Thin-Filmed Sensor for Ethanol Detection, **IEEE Transactions on Nanotechnology**, vol.7, pp.169,2018. (IF: 2.967)

[9] Sudha Murugesan, Radha Shankararajan, Kirubaveni Savarimuthu, **Kiruthika Ramany**, Govindaraj Rajamanickam, Santhosh Narendhiran, “Experimental study on structural, optoelectronic and room temperature sensing performance of Nickel doped ZnO based ethanol sensors”, **Solid State Sciences**, 2018. (IF: 3.059)

[10] Binowesley R, Kirubaveni Savarimuthu, **Kiruthika Ramany**, Govindaraj Rajamanickam, “Experimental Evaluation of Tailored Double Heterojunction Non-Toxic Metal Oxide-Based Nanostructured Sensor for Multi-Sensing Application”, **IEEE Transactions on Nanotechnology**, 2024.(IF:2.967)

[11] Shyamala V, Radha S, **Kiruthika R**, Iyappan G, “Experimental evaluation of ZnO nanorods based eco-friendly sensor for melamine detection in milk”, **Sensor review**, 2024.

[12] Shyamala Venkatachalapathi , Radha Shankararajan, **Kiruthika Ramany**, Iyappan Gunasekaran, “Investigational study of risk-free metal oxide-based nanostructures for identifying urea in dairy products”, **IETE Journal of Research**,pp.1-5,2024.

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[14] Shyamala Venkatachalapathi, Radha Shankararajan, & **Kiruthika Ramany**, “Role of biosensors and nanomaterials in the detection of adulterants (melamine and urea) in milk and milk products”, **Sensor Review**, 2024.

[15] V. Shyamala, S. Radha, **R. Kiruthika** and K. R. Acchutharaman, “Experimental investigation of a mixed metal oxide (MMO)-based sensor for the detection of adulterants (urea and melamine) in milk at room temperature”, **J Mater Sci: Mater Electron**, 2024

[15] R. Binowesley, Kirubaveni Savarimuthu, **Kiruthika Ramany**, Poundoss Chellamuthu, “Experimental investigation of sandwich-modelled sensor tailored using TiO₂ and ZnO for dual sensing environmental monitoring application”, **Journal of Materials Science: Materials in Electronics**, 2023. (IF: 2.8)

[16] Iyappan G, Govindaraj R, Ramasamy P, **Kiruthika R** & Radha R, “Vibration sensing analysis of ZnO nanostructures grown using low-temperature aqueous growth method at varying temperatures’, **Journal of Material Science Materials In Electronics**,2022 (IF:2.475).

[17] Iyappan G, Govindaraj R, Ramasamy P, **Kiruthika R** & Radha R “Influence of refresh hydrothermally grown ZnO nanorods for vibration sensing application”, **IETE Journal of Research**, 2021. (IF:2.33)

[19] Sudha Murugesan, Radha Shankararajan, Kirubaveni Savarimuthu, **Kiruthika Ramany**, Govindaraj Rajamanickam, Santhosh Narendhiran, “Experimental study on structural, optoelectronic and room temperature sensing performance of Nickel doped ZnO based ethanol sensors”, **Circuit World**, 2018. (IF: 1.39)

[20] Iyappan G, Govindaraj R, Ramasamy P, **Kiruthika R** & Radha R “Experimental study of parametric dependency of ZnO nanorods based vibration sensor”, **IETE Journal of Research**, 2021. (IF:2.33)

[21] **Kiruthika Ramany**, Radha Shankararajan, Kirubaveni Savarimuthu, Priyadharshini Elumalai, “Fabrication and characterization of ZnO nanostructured thin film piezoelectric sensor for accelerometer application, **International Journal of Pure and Applied Mathematics**,2018.

[22] **Kiruthika Ramany**, Kirubaveni Savarimuthu, Sudha Murugesan, Radha Shankararajan, “Design, Simulation and Optimization of ZnO Nanorod for Energy Harvesting Application”, **Research journal of pharmaceutical biological and chemical sciences**, 2017, 8, 23-6.

INTERNATIONAL CONFERENCES

[1]**Kiruthika.R**, Kirubaveni.S, Priyadharshini.E, Radha.S, “Fabrication and Characterization of ZnO nanostructured thin film piezoelectric sensor for accelerometer application”, International Conference on Innovations and Discoveries in Science, Engineering & Technology (ICIDSET-18), April 17 & 18, 2018, KCG of Technology, Chennai.

[2] **Kiruthika.R**, Radha.S, Kirubaveni.S, Shyamala.V, “Fabrication and experimental analysis of CUSCN coated ZnO nanorods for piezoelectric accelerometer application”, International Conference on Intelligent Digital Transformation (ICIDT - 2019),July 11-13, 2019, Sri Ramakrishna Engineering College, Coimbatore.

[3] **Kiruthika Ramany**, Radha Shankararajan, Kirubaveni Savarimuthu, Shyamala V, “Fabrication and Characterization of ZnO Nanorods for Room Temperature Carbon Monoxide Sensing Application”, 2020 2nd International Conference on Electrical, Control and Instrumentation Engineering (ICECIE), Nov-28,2020, Kuala Lumpur, **Malaysia**.

[4] **Kiruthika Ramany**, Radha Shankararajan, Shyamala Venketeshan, Kirubaveni Savarimuthu, “Fabrication and Characterization of ZnO based thin Film for methane gas sensing application”, International Conference on Instrumentation, MEMS and Bio sensing Technology-2020, 13 – 15 February 2020, SRM, Kattankulathur , Chennai.

- [5] Iyappan G, Govindaraj R, Ramasamy P, **Kiruthika R** & Radha R, "Vibration sensing analysis of ZnO nanostructures grown using low-temperature aqueous growth method at varying temperatures", Solution Grown Crystals and their useful applications (SGCA 2021), SSN Research Centre, SSN Institutions, Chennai, Tamil Nadu, September 13-15,2021.
- [6] Iyappan G, Govindaraj R, Ramasamy P, **Kiruthika R** & Radha R, "Experimental study of ZnO nanostructures-based vibration sensor",4th International Conference on Recent Trends in Applied Science and Technology (ICRTAST)", Department of physics, Bharathidasan University, Tiruchirappalli, Tamil Nadu, December 26-29,2020.
- [7] **Iyappan G**, Govindaraj R, Ramasamy P, **Kiruthika R** & Radha R, "Experimental study of parametric dependency of ZnO nanorods based vibration sensor",24st National Seminar on Crystal Growth and Applications (NSCGA-2020), Periyar University, Salem, Tamil Nadu, February 3-5,2019.
- [8] Iyappan G, Govindaraj R, Ramasamy P, **Kiruthika R** & Radha R, "Experimental study of parametric dependency of ZnO nanorods for vibration sensor applications", emerging trends in Materials Science and Technology (NCEMAT2020), Department of Physics, Parvathy's College, Dindigul, Tamil Nadu, February 2, 2020.
- [9] Iyappan G, Govindaraj R, Ramasamy P, **Kiruthika R** & Radha R, "Optical and Electrical analysis of ZnO nanostructures for vibration sensor application", 3rd International Conference on Recent Trends in Applied Science and Technology (ICRTAST-2019), SSN Institutions, Chennai, Tamil Nadu, September19-21, 2019.

REFERENCES

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DECLARATION

I hereby declare that all the particulars furnished above are true, complete, and correct to the best of my knowledge and belief.

Dr.Kiruthika Ramany