

Saravanan Rajamani



RESEARCH EXPERIENCE

Research Associate

[07/2022 – 11/2023]

University of Manchester, Manchester

- Solution processed Lead Halide and Lead-free double perovskites in glovebox and ambient environments.
- Fabrication and characterization of perovskite-based photodetectors and solar cells.
- Automation of device characterisation setup using Python.
- Setup custom macro/micro photoluminescence (PL) systems.

Postdoctoral Researcher (Assegno di Ricerca)

[09/2020 – 02/2022]

Institute of Nanotechnology (CNR Nanotec), Lecce, Italy

- Fabrication of a-Si TFTs and realisation of nano-helical structures on a-Si TFTs using FEBID/FIBID
- Setup custom probe stations and characterization of circularly polarized visible photodetectors.

SERB National Post Doctoral Fellow

[08/2017 – 08/2019]

Indian Institute of Technology Jodhpur, India

- Process development of Germanium thinfilm and nanostructures by sputter deposition.
- Few layer MoS₂ using thermal CVD technique and sulfurization of sputtered MoO₃.
- Fabrication of photodetectors based on MoS₂ and Ge
- Successful fulfilment of research objectives within grant timelines.
- Gained experience in Project management skills as a principal investigator.
- Annual progress reports for grant awarding bodies

Research Associate

[10/2015 – 03/2017]

Indian Institute of Technology Jodhpur, India

- Developing SiO₂, Si₃N₄ and Al₂O₃, ZnO thinfilm deposition process using sputter deposition.
- Rapid thermal annealing and furnace annealing of Ga, In, N implanted SiO₂, Si₃N₄ and Al₂O₃ thinfilm.
- Fabrication and characterization of Ga₂O₃ and In₂O₃ based UV photodetectors.
- Photolithography mask design using L-Edit.
- Project management skills including procurement of consumables and equipment.

Project Assistant

[03/2010 – 11/2011]

Central Electronics Engineering Research Institute, India

- Process development for Silicon nitride and Si-rich SiN thinfilm using PECVD.
- Optimization of reactive ion etching and wet chemical etching processes for surface texturization of Si solar cells.
- Fabrication and characterization of Si solar cells.

EDUCATION

PhD European Doctorate in Electronic Materials, Optoelectronics and Microsystems (EDEMOM) [2012-2015]
University of Rome "Roma Tre", Rome (Italy)

Master of Technology in Nanotechnology [2007-2009]
VIT University, Vellore (India)

Master of Science in Applied Electronics [2005-2007]
Bharathiar University, Coimbatore (India)

Bachelor of Science in Electronics [2002-2005]
Bharathiar University, Coimbatore (India)

RELEVANT EXPERIENCE

- Device fabrication in cleanroom environment, Glovebox workstations
- Sputter deposition, Thermal Evaporation, PECVD, Spin coaters
- Reactive Ion Etching, Wet Etch
- Mask design and Photolithography (MJB4, MA6 Mask aligners)
- XRD, SEM, UV/Vis, PL
- Wafer level Electrical (I-V, C-V), Optical characterization (Probe stations, monochromators, lasers, free space assemblies)

DIGITAL SKILLS

Origin Pro / Python / Microsoft Office / LaTeX

DESIGN AND SIMULATION

- Synopsys Sentaurus and ISE TCAD (GENESISe)
- L-Edit

AWARDS

National postdoctoral fellowship [2017-2019]
Science and Engineering Research Board (SERB), India

LANGUAGE SKILLS

Mother tongue(s): **Tamil**

Italian: Working Proficiency

English: Fluent

Hindi: Working Proficiency

PUBLICATIONS

Circularly Polarized Light Detection Through 3D Chiral Metasurface-Based Phototransistors

S. Rajamani, D. Simeone, A. Pecora, M. Manoccio, G. Balestra, A. H. Bayramov, N. T. Mamedov, A. Passaseo, G. Gigli, D. M. Tobaldi, V. Tasco, M. Esposito, A. Cola, M. Cuscunà.
Advanced Materials Technologies, 9, 2301250, 2024.

Gallium nitride nanocrystal formation in Si₃N₄ matrix by ion synthesis

M. K. Rajbhar, **S. Rajamani**, SK Singh, S Surodin, D Nikolichev, R Kryukov, D Korolev, A Nikolskaya, A Belov, A. Nezhdanov, Mikhaylov, D Tetelbaum, M Kumar.
Bulletin of Materials Science, 43, 234, 2020.

Sequential nitrogen ion implantation in Si based GaAs matrix and subsequent thermal annealing process: electrical characterization.

N.L. Sharma, **S. Rajamani**, V. Shengurov, N. Baidus, D. Korolev, A. Nikolskaya, A. Mikhaylov, D.Tetelbaum, M. Kumar.
Proc Indian Natn Sci Acad, 85 No.3, 681, 2019

Boosting Sensing Performance of Vacancy Containing Vertically Aligned MoS₂ using rGO particles

R. Kumar, N. Goel, A. V. Agrawal, R. Raliya, **S. Rajamani**, G. Gupta, P. Biswas, M. Kumar, and M. Kumar.
IEEE Sensors Journal, 19, 10214, 2019

High performance hydrogen sensor based on reverse biased MoS₂/GaN heterojunction

N. Goel, R. Kumar, S. K. Jain, **S. Rajamani**, B. Roul, G. Gupta, M. Kumar, and S B Krupanidhi.
Nanotechnology, 30, 314001, 2019

Deep UV Narrow Band Photodetector Based on Ion Beam Synthesized Indium Oxide Quantum Dots in Al₂O₃ Matrix

S. Rajamani, K. Arora, A. Konakov, A. Belo v, D. Korolev, A. Nikolskaya, A. Mikhaylov, S. Surodin, R. Kryukov, D. Nikolitchev, A.Sushkov, D. Pavlov, D. T etelbaum, M. Kumar and M. Kumar.
Nanotechnology, 29 305603, 2018.

Improved sensitivity with low limit of detection of hydrogen gas sensor based on rGO loaded Ni doped ZnO nanostructures.

V. S. Bhati, S. Ranwa, **S. Rajamani**, K. Kumari, R. Raliya, P. Biswas, and M. Kumar
ACS Appl. Mater. Interfaces, 10, 11116, 2018.

Enhanced Solar blind Photodetection Performance of Encapsulated Ga₂O₃ Nanocrystals in Al₂O₃Matrix

S. Rajamani, K. Arora, A. Belov, D. Korolev, A. Nikolskaya, Y. Usov, D. Pavlov, A. Mikhaylov, D. Tetelbaum, M. Kumar and M. Kumar.
IEEE Sensors Journal, 18, 40464052, 2018.

Influence of self-heating on characteristics of AlGaN/GaN HEMT on Si (111) substrate: Validation of simulation results.

A. Nigam, T. N. Bhat, **S. Rajamani**, S. Tripathy, and M. Kumar.
AIP Advances 7, 085015, 2017.

Efficient room temperature hydrogen sensor based on UV activated ZnO nano network.

M. Kumar, R. Kumar, **S. Rajamani**, S. Ranwa, M. Fanetti, M. Valant, and M. Kumar.
Nanotechnology, 28, 365502, 2017.

Effect of annealing on carrier transport properties of GaN incorporated silicon.

S. Rajamani, D. Korolev, A. Belov, S. Surodin, D. Nikolitchev, E. Okulich, A. Mikhaylov, D. Tetelbaum and M. Kumar
RSC Advances, 2016, 6, 7469174695.

Design and Simulation of Optically Controlled Field Effect Transistor.

V. Sorianello, L. Colace, **S. Rajamani**, and G. Assanto.
Physica Status Solidi C 11, 81, 2014

Investigation of static and dynamic characteristics of optically controlled field effect transistor

L. Colace, V. Sorianello, and **S. Rajamani**
Journal of Lightwave Technology, 32, 12, 2233, 2014.

Efficiency enhancement of silicon solar cells with silicon nanocrystals embedded in PECVD silicon nitride matrix.

WR. Taube, A. Kumar, **R. Saravanan**, P.B. Agarwal, P. Kothari, B.C. Joshi, D. Kumar,
Solar Energy Materials and Solar Cells, 101, 32 35, 2012

Plasma Enhanced Chemical Vapor Deposited (PECVD) Silicon Rich Nitride Thin Films for Improving Silicon Solar Cells Efficiency

A.Kumar, W.R. Taube, **R. Saravanan**, P.B. Agarwal, P. Kothari, D. Kumar,
International Journal of Scientific Engineering and Technology.1, 111 116, 2012

Nano arrays of SAM by dip pen nanowriting (DPN) technique for futuristic bio electronic and biosensor applications.

PB. Agarwal, A. Kumar, **Saravanan R**, A.K. Sharma, and C Shekhar.
Thin Solid Films, 519, 10251027, 2010