

# Curriculum vitae

PERSONAL INFORMATION Saravanan Rajamani

## EDUCATION AND TRAINING

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- Jan 2012–Mar 2015 **PhD European Doctorate in Electronic Materials, Optoelectronics and Microsystems (EDEMOM)**  
University of Rome “Roma Tre”, Rome (Italy)
- Jun 2007–May 2009 **Master of Technology in Nanotechnology**  
VIT University, Vellore (India)
- Apr 2005–Apr 2007 **Master of Science in Applied Electronics**  
Bharathiar University, Coimbatore (India)
- May 2002–Jun 2005 **Bachelor of Science in Electronics**  
Bharathiar University, Coimbatore (India)

## WORK EXPERIENCE

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- Sep 2020– **Assegno di ricerca**  
Institute of Nanotechnology (CNR-NANOTEC), Lecce, Italy  
**Realization and characterization of sensing devices for environmental monitoring applications**
- Aug 2017– Aug 2019 **SERB-National Post-Doctoral Fellow**  
Indian Institute of Technology Jodhpur, Jodhpur (India)  
**Design and Fabrication of Germanium based Infrared Photodetectors**
  - Germanium nanostructures using RF sputtering
  - Few layer MoS<sub>2</sub> using thermal CVD technique and sulfurization of sputtered Mo
  - Fabrication of photodetectors and gas sensors based on MoS<sub>2</sub> and Ge
- Oct 2015–Mar 2017 **Research Associate**  
Indian Institute of Technology Jodhpur, Jodhpur (India)  
**1. Ion beam synthesis and characterization of Gallium Nitride based nanocrystal embedded in Si matrices for new generation photodetector and light emitter applications.**  
Role-Played:
  - SiO<sub>2</sub>, Si<sub>3</sub>N<sub>4</sub> and Al<sub>2</sub>O<sub>3</sub> thin film deposition using RF sputtering technique.
  - Structural, optical and electrical Characterization of Ga, In, N implanted samples.
  - Fabrication and characterization of UV photodetectors**2. Metal oxide based gas sensors**  
Role-Played:
  - Gas sensors based on ZnO nanostructures.

Mar 2010–Nov 2011

- Design of photolithography masks and device fabrications.

**Project Assistant**

Central Electronics Engineering Research Institute, Pilani (India)

**Nanostructured Advanced Materials-Silicon nanoparticles /films for Photovoltaics applications.**

Role-played:

- SiN, Si rich SiN thin films using PECVD and LPCVD for solar cell applications
- Optimization of reactive ion etching and wet chemical etching processes for surface texturization of silicon solar cells.
- Silicon Nanoparticles in silicon nitride matrix for solar cell applications.
- Fabrication of Si solar cells incorporating silicon nitride and silicon rich nitride films as anti-reflection coating.

## ADDITIONAL INFORMATION

## Publications

- 1 Gallium nitride nanocrystal formation in Si<sub>3</sub>N<sub>4</sub> 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, A. Mikhaylov, D. Tetelbaum, M. Kumar, *Bulletin of Materials Science*, 43, 234, 2020.
- 2 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
- 3 Boosting Sensing Performance of Vacancy-Containing Vertically Aligned MoS<sub>2</sub> 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
- 4 High-performance hydrogen sensor based on reverse-biased MoS<sub>2</sub>/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
- 5 Deep UV Narrow-Band Photodetector Based on Ion Beam Synthesized Indium Oxide Quantum Dots in Al<sub>2</sub>O<sub>3</sub> Matrix  
**S. Rajamani**, K. Arora, A. Konakov, A. Belov, D. Korolev, A. Nikolskaya, A. Mikhaylov, S. Surodin, R. Kryukov, D. Nikolitchev, A. Sushkov, D. Pavlov, D. Tetelbaum, M. Kumar and M. Kumar. *Nanotechnology*, 29, 305603, 2018.
- 6 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.
- 7 Enhanced Solar-blind Photodetection Performance of Encapsulated Ga<sub>2</sub>O<sub>3</sub> Nanocrystals in Al<sub>2</sub>O<sub>3</sub> Matrix.  
**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, 4046-4052, 2018.
- 8 Influence of self-heating on characteristics of AlGaIn/ 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.
- 9 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.

- 10 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, 74691 - 74695.
- 11 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.
- 12 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.
- 13 Efficiency enhancement of silicon solar cells with silicon nanocrystals embedded in PECVD silicon nitride matrix.  
W. R. 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.
- 14 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.
- 15 Nano-arrays of SAM by dip-pen nanowriting (DPN) technique for futuristic bio-electronic and bio-sensor applications.  
P. B. Agarwal, A. Kumar, **Saravanan R**, A.K. Sharma and C. Shekhar.  
*Thin Solid Films*, 519, 1025-1027, 2010.

- Conferences
1. Cost effective growth of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> on silicon substrate for solar-blind photodetector application.  
K. Arora, **S. Rajamani**, M. Kumar, and M. Kumar.  
*ICN:3I-2017, 6-8 December 2017, held at Indian Institute of Technology Roorkee, Roorkee, India.*
  2. Synthesis and Characterization of GaN nanocrystals in Silicon Matrix using Ion Implantation,  
**S. Rajamani**, A. Belov, D. Tetelbaum and M. Kumar,  
*CEMAT2016, 18-19 July 2016 held at Indian Institute of Science Bangalore, India.*
  3. Germanium Gate Optically Controlled Field Effect Transistors using TCAD.  
**S. Rajamani**, L. Colace, V. Sorianello.  
NCSMD2016, 4-6 March 2016, held at Indian Institute of Technology Jodhpur. India
  4. Simulations of Ge based optically controlled field effect transistors.  
**Rajamani. S**, Sorianello. V, De Iacovo. A, Colace. L,  
IEEE 11th International Conference on Group IV photonics, Paris- 27-29, (Aug. 2014).
  5. Germanium based optically controlled field effect transistor.  
V. Sorianello, L. Colace, **S. Rajamani**, and G. Assanto,  
15° Convegno Nazionale sulle Tecniche Fotoniche nelle Telecomunicazioni (FOTONICA), Milan, Italy 2013