

PERSONAL INFORMATION

SHOMNATH BHOWMICK



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Sex Male | Date of birth 20th April 1987 | Nationality India | Marital Status: Married

WORK EXPERIENCE

2012 June-2016 (present)

Institute Of Microelectronics & Microsystem (IMM-CNR) Naples, Italy

Designation: Research Scientist (MEMS engineer)

Experience: Experience working in clean room area, fabrication process of microheater on pyroelectric crystal Lithium Niobate, pyroelectric effect characterization, pyroelectric application using microheaters such as: droplet jetting & microneedles formation, thin film characterization, microfluidics designs, microfluidics mask preparation, PDMS microfluidic chamber, AFM & EFM characterization for Ferroelectric crystal and polymer.

Processes: Mask aligner, RIE, Four point probe, e-beam, sputtering, thermal evaporator, plasma cleaning & plasma bonding for PDMS chamber, Wet bench, Oxidation, lithography process, Sputtering & Thermal deposition, optical Profilometer, clean room processing, IR Thermal Camera.

Software's: COMSOL, Solid Works, Auto CAD, Inkscape, matlab

2011 January-2012 May

I2n Tech. Pvt. Ltd & IISc (Indian Institute of Science) Bangalore, India

Designation: MEMS Engineer (Research Developer)

Experience: Handling STM & AFM, Imaging sample surfaces and processing the images, fabricating high aspect ratio tips for AFM with nanometre range tip radius, working on the Piezo Nano positioning of the STM scanner, also working on the basic design, analysis & simulation for the piezo slip stick motion, tuning fork & cantilever with tips using COMSOL (Piezo electric & MEMS module).

Processes: Wet bench, Oxidation, lithography process, Sputtering & Thermal deposition, Optical Profilometer, laser writing, clean room processing.

Software's: COMSOL, ANSYS, Solid Works, Ubuntu 11.04 & 10.04, GXSM 2, Gywdion.

EDUCATIONAL TRAINING

2013 March – 2017 April
(expected)

University of Federico II, Naples, Italy

Doctorate (PhD.) in Information Technology and Electrical Engineering (ITEE)

Thesis: Characterization of Pyroelectricity from LiNbO_3 Using Microheaters.

2009 March – 2011 April

University of Sheffield & University of LEEDS, United Kingdom

Post-Graduation DIP in Nano electronics & Mechanics

Modules: Inorganic & Organic Semiconductor nanostructures, Nano scale magnetic materials & devices, Microfluidics, Next Generation silicon technology, MEMS & NEMS, Nanostructure and Nano mechanics, Generic methodologies for nanotechnology.

Laboratory experience: Clean room processing, thin film deposition (sputtering), cantilever fabrication.

Dissertation: Magnetic MEMS (Micro Electro Mechanical Systems).

2005 March – 2009 April

Nagarjuna Institute of Science & Technology, India

Graduation in Electronics & Communication

Modules: Applied physics, Applied Maths, VLSI, Microwave & Optical Communication, Control Systems, Electronic Circuit Analysis, Microprocessors and Digital electronics,

Technical projects:

- Designed a Guided rover which travels along the predefined path described in MATLAB.
- Designed a rover which is a basic model of the mars rover works on solar energy and operates automatically.

2002 March – 2004 April

Sri Vagdevi Jr. College, State Intermediate Board, India

Maths (75%), Physics(65%), Chemistry (64%), English (72%)

2001 March – 2002 April

Kendriya Vidyalay No.1, Central Board of India

Aggregate (72%)

PERSONAL SKILLS

Mother tongue

Bengali

Communication skills

English IELTS score, Hindi, Bengali, Italian (beginner), Telugu.

Job related skills

Lithography, Thin Films and Nanotechnology, Material Characterization, Sensor Development, Sputtering, Microelectromechanical Systems (MEMS), Microfabrication, Nanofabrication, Microfluidics, Fabrication, Photolithography, Cleanroom Processing, Thin Film Deposition, Wet Etching, Soft Lithography, Cleanroom Technology, Etching, Nanolithography, Electron Beam Evaporation, Droplet Microfluidics, Dielectrophoresis, COMSOL Multiphysics, MEMS, Spin Coating, Sensor Technology, Electron Beam Deposition, Micro-Electrical-Mechanical Systems, PDMS, Electron Beam Lithography.

Other skills

Amateur Photographer, Go-Kart racing, chef (Indian & Italian cuisine), Scuba diving

ADDITIONAL INFORMATION

Publications

O Gennari, S Grilli, S Coppola, V Pagliarulo, V Vespini, G Coppola, **S Bhowmick**, M A Gioffré, G Gentile, V Ambrogi, P Cerruti, C Carfagna, P Ferraro: *Spontaneous Assembly of Carbon-Based Chains in Polymer Matrixes through Surface Charge Templates*. Langmuir 12/2013; 29(50). DOI:10.1021/la403603d.

Mecozzi, Laura; Gennari, Oriella; Rega, Romina; Grilli, Simonetta; **Bhowmick, Shomnath**; Gioffré, Mariano; Coppola, Giuseppe; Ferraro, Pietro: *Spiral formation at microscale by μ -pyro-electrospinning*. *Soft matter* 19 may 2016; DOI:10.1039/C6SM00156D

Under review:

S.Bhowmick, M.Iodice, M.Gioffrè, M.Riccio, A.Irace, G.Romano, G.Breglio, S.Grilli, P.Ferraro, L.Mecozzi, S.Coppola, O.Gennari, R.Regá, G.Coppola: *Investigation of pyroelectric fields generated by lithium niobate crystals through integrated microheaters*.

Conference proceedings

May 2016

Mecozzi, Laura; Gennari, Oriella; Rega, Romina; Grilli, Simonetta; **Bhowmick, Shomnath**; Gioffré, Mariano; Coppola, Giuseppe; Ferraro, Pietro: *Spiral formation at microscale by μ -pyro-electrospinning*. AIP Conference Proceedings **1736**, 020079 (2016); Naples, Italy.
doi: 10.1063/1.4949654

May 2015

S Bhowmick, M Iodice, M Gioffrè, G Breglio, M Riccio, A Irace, G Romano, G Coppola: *Pyro-Electro-Thermal Analysis of LiNbO₃ using Microheaters*. Fotonica AEIT Italian Conference on Photonics Technologies, Turin, Italy.

September 2013

S Bhowmick, O Gennari, S Grilli, V Vespini, G Gentile, V Ambrogi, P Cerruti, M Gioffre, C Carfagna, P Ferraro, S Coppola, Vito Pagliarulo, G Coppola: *Carbon Based Wires assembling using Pyroelectric Effect controlled by means of Titanium μ -Heaters*. 5th EOS Topical Meeting on Optical Microsystems (O μ S'13); 1st EOS Topical Meeting on Optics at the Nanoscale Capri, Italy

Seminars

May 2015

Pyro-Electro-Thermal Analysis of LiNbO₃ using Microheaters. Fotonica AEIT Italian Conference on Photonics Technologies, Turin, Italy.

Honors & awards

14th September 2013

Award: Best student poster presentation award for 5th EOS topical meeting on optical microsystems; "Carbon Based Wires assembling using Pyroelectric Effect controlled by means of Titanium μ -Heaters".

Memberships

Member of SIOF (Society of Italian optics and Photonics) 2013-2016.
Member of GE (Gruppo Italiano di Elettronica) 2014-2017.

Courses

28th January 2013 – 15th February 2013

International Centre for theoretical Physics (ICTP), Winter college on optics: trends in laser development and multidisciplinary applications to science and industry. 28th Jan. 2013-15th Feb. 2013

Teaching experience

AFM/EFM course for master students groups:
(Capri project, STEPFAR project, CERVIA project, STEPFAR project).

Citations

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Certifications

27th July 2015 – 31st July 2015

Fundamental of XE7 system, contact mode of AFM, Non-contact mode, Lithography, electrostatic Force microscopy, scanning kelvin probe microscopy; park system, Korea.

17th June 2015 - 19th June 2015

LabVIEW core 1; National instruments, University of Federico II, Naples, Italy

12th November 2012 – 14th November 2012

Introduction to COMSOL multiphysics, advance course to COMSOL multiphysics 4.3a, Acoustic modelling with COMSOL multiphysics, CFD & Heat transfer modelling, Rome, Italy.

Workshops

Capri EOS tropical meeting 2015 17th September -19th September.

Toriono Fotonica conference 6th- 8th may 2015.

GE (Gruppo Electronica) Siena Conference 22nd-24th June 2015

Rome Nano-Italy conference 23rd Sept.2015
