BIODATA

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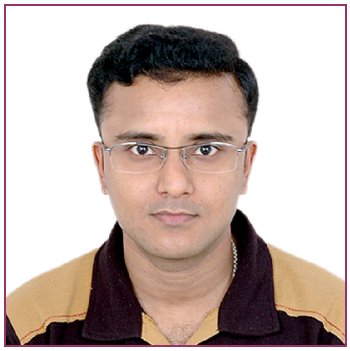

OBJECTIVE

To be a part of the Research & Development fraternity involved in research in the field of Applied Science and Engineering. I would like to take up a challenging position in an active Research – cum – Academic institution which will fulfill my longing to continue learning. My priority is to make nontrivial contributions towards the education and research activity of the institute through a continuous process of application of mind and acquired expertise.

RESEARCH INTERESTS

My research interest is in the broad field of Optical Instrumentation. Specifically I take interest in sensor development involving measurement of deflections of micro/nano-mechanical systems by optical methods and also characterize the mechanical properties of the micro/nano-mechanical devices in the process. I have worked on the fabrication of polymer based micro-mechanical devices by photopolymerisation for microcantilever based sensor technology. I was involved in study and design of a measurement system to detect specific biomolecules in a biofluidic channel employing photospectrometry as a project intern with Philips Research Asia. I do have interest is in the field of imaging and display devices as an amateur as well, but would like to get a thorough insight in the field of imaging science. To sum up, I am keenly interested in developing optical, opto-mechanical or opto-electronic transduction principles into viable sensors and measurement devices which would push the frontiers of metrology in the micro and nano domain.

RESEARCH WORK

Broad Area of Research: *Optical Metrology*

Thesis Adviser: *Professor R.M. Vasu*
Instrumentation & Applied Physics Department,
Indian Institute of Science
Bangalore - 560 012, INDIA

M.Sc. Engg Thesis submitted: *AUGUST 2011*

Dissertation Title: *Novel Diffraction based deflection profiling for Microcantilever sensor technology*

RESEARCH SKILLS

- *Proposed & demonstrated a diffraction based measurement technique to measure deflection profiles ~ 1nm in micro-cantilever based sensors achieving surface stress resolutions ~ μN/m.*
- *Contributed to a new method of phase unwrapping with grey-coded patterns for the extraction of 3D profile of objects with fringe projection.*
- *Optimization of an in-house developed Microstereolithography system for microfabrication of microcantilevers by a novel bottom up approach for microcantilever sensor technology*
- *Involved in the design of a sensitive optical measurement system for detection of a specific biomolecule in a biofluidic channel by photospectrometry for a short time as a research intern.*

Computational Skills

- *Simulated Fresnel and Fraunhofer diffraction pattern of a planar wavefront when incident on the proposed double microcantilever based sensor structure using MATLAB.*
- *Obtaining deflection profiles of microcantilever structures from obtained Fraunhofer patterns using phase correlation and maxima and minima detection techniques in MATLAB.*
- *Preliminary working experience on ANSYS for simulating stress profiles in microcantilever structures under induced loads.*

Experimental Skills

- *Well conversed with optical bench setups and handling of digital cameras with all manual control parameters.*
- *Working experience on an in house built micro-stereo lithographic system to fabricate polymer based microcantilever structures by photopolymerisation.*

Programming Skills

- *Well versed with Matlab and C programming*
- *Preliminary knowledge of Visual C++ coding and Autocad*

Packages

- *Microsoft Windows(all versions) and Office package*
- *Image processing packages like Photoshop*
- *Audio and Media processing packages like Adobe Audition, Sony Soundforge, Sony Vegas.*

CONFERENCE PRESENTATIONS & PUBLICATIONS

1. **June 1st 2010, Photonics North 2010, Niagara Falls, Canada (Poster Presentation)**

   A. Phani, *"A non-contact measurement technique to measure micro-surface stress and obtain deformation profiles of the order of 1nm in microcantilever-based structures by single image optical diffraction method", SPIE Proceedings Vol. 7750, p: 77502C.*

2. **June 7th 2010, Applied Industrial Optics: Spectroscopy, Imaging and Metrology (AIO) [OSA], Tucson, Arizona, USA (Oral Presentation)**

   A. Phani, *"Optical Diffraction Based Single Image Method to Obtain Nanometer Resolution Deflection Profiles in Micro-Cantilever Based Sensors," in Applied Industrial Optics: Spectroscopy, Imaging and Metrology, OSA Technical Digest (CD) (Optical Society of America, 2010), paper AMB1.*

3. **August 2010, SPIE: Reflection, Scattering, and Diffraction from Surfaces II [Optical Engineering + Applications], San Diego, California, USA (Poster Presentation only)**

   Title: Single Image Optical Diffraction based method to measure 1nm deflection profiles of uniformly deformed Micro-cantilever based sensor probes.

4. **August 2010, SPIE: Applications of Digital Image Processing XXXIII [Optical Engineering + Applications], San Diego, California, USA (Poster Present.)**

   M. Kondiparthi, A. Phani, *"Novel gray coded pattern for unwrapping phase in fringe projection based 3D profiling", SPIE Proceedings Vol. 7798, p: 77982L.*

5. **November 2010, PSE 2010 – Polymer Science and Engineering : Emerging Dimensions, Punjab University (Poster Presentation)**

   Title: Thermo-analytical and Mechanical Characterization of Poly (HDDA-co-MMA).

6. **January 2011, Micromachining and Microfabrication Process Technology XVI [Photonics West – MOEMS – MEMS], San Francisco, California, USA (Oral Presentation)**

   A. Goswami, A. Phani, A. Krishna, N. Balashanmugam, G. Madras and A.M.Umarji, *"Poly-HDDA microstructure fabrication using microstereolithography for micro-cantilever based sensor technology", SPIE Proceedings Vol. 7926, p: 79260C*

7. A. Phani, R.M. Vasu, *"Novel diffraction based bent profiling of microcantilever sensors", [Manuscript under preparation]*

8. A. Goswami, A. Phani, G. Madras and A.M. Umarji, "*Novel bottom-up approach fabrication of polymeric microcantilever sensors by Microstereolithography", [Manuscript under preparation].*

ACADEMIC QUALIFICATIONS

Board Examination [1999 – 2001]

EXAMINATION	SCHOOL	BOARD/COUNCIL	YEAR OF PASSING	DIVISION	% OF MARKS
MADHYAMIK / SECONDARY	*South Point High School*	*W.B. BOARD OF SECONDARY EDUCATION*	*1999*	*1st*	*82.875*
HIGHER SECONDARY	*South Point High School*	*W.B. COUNCIL OF H.S. EDUCATION*	*2001*	*1st with distinction*	*75.6*

After high school I joined Dinabandhu Andrews College under Calcutta University in 2001 to pursue B.Sc. in Electronics Honors. However I did not continue with the course and joined engineering the following year in 2002. Passed Electronics and Instrumentation Engineering from Heritage Institute of Technology, Kolkata under West Bengal University of Technology in 2006.

B.Tech in Electronics & Instrumentation Engineering: DGPA 8.71 [2002 – 2006]

EXAMINATION	UNIVERSITY	YEAR OF PASSING	GRADE POINTS
1st SEMESTER	*WEST BENGAL UNIVERSITY OF TECHNOLOGY*	*2006*	*8.77*
2nd SEMESTER			*8.70*
3rd SEMESTER			*8.67*
4th SEMESTER			*8.62*
5th SEMESTER			*8.23*
6th SEMESTER			*8.30*
7th SEMESTER			*8.93*
8th SEMESTER			*9.46*

B.Tech Project

Design and operational demonstration of an ECG Amplifier with achieved SNR of 50dB in bread-board circuit.

B.Tech Industrial Training

In hand training of plant instruments and Control Systems in Indian Oil Corporation Limited, Haldia Refinery (IOCL).

Joined ***Instrumentation & Applied Physics Department of Indian Institute of Science, Bangalore, INDIA*** *to pursue M.Sc. Engg in August 2007. I submitted my M.Sc. Engg Thesis on 3rd of August 2011.*

M.Sc. Engg : CGPA of 5.9 / 8.0 [2007 – 2011]

TERM	UNIVERSITY	YEAR OF PASSING	TERM GRADE POINTS
August - December 2007	*INDIAN INSTITUTE OF SCIENCE BANGALORE, INDIA*	*2011*	*5.9/8.0*
January - April 2008			*6.0 /8.0*

RESEARCH INTERNSHIP [May 2011 – JUNE 2011]

*Joined **Philips Research Asia** as a project intern. Was involved in the study and design of a measurement system for the detection of a specific biomolecule in a biofluidic channel by photospectrometry.*

RESEARCH ASSISTANCESHIP [August 2011 – present]

Working as a Project Assistant in Chemical Engineering Department, Indian Inst. of Science on the project of Microcantilever Sensor Technology as an extension of work done for Masters dissertation.

INDUSTRIAL EXPERINCE [2006 – 2007]

*Joined **TATA Chemicals Ltd.** as a GET Instrumentation Engineer in August 2006. The offer was through campus placement and was posted in Mithapur (Gujarat, INDIA). I was assigned the duties of an Assistant Manager in the department of Instrumentation at the Waste Management and Cement section of the plant.*

Industrial project experience of Installation and Commissioning automatic ROTO Packer of EEL Make.
Hands on experience on various plant instruments: RTD, Thermocouple, Pressure Transmitters, Speed Switches, Level Transmitters, Gas Analyzers, Proximity switches etc.
Preliminary working experience on Honeywell's EXPERION PKS and TDC 3000 DCS systems
Working experience on SAP: PM and MM Module.
I resigned from my duties in July 2007 to pursue M.Sc. Engg in Indian Institute of Science, Bangalore.

ACHIEVEMENTS

- *Qualified GATE (National level Graduate Aptitude Test) in 2006; All India Rank: 197*
- *Was among the top 5 rank holders of the University in the B.Tech course.*
- *Was offered the post of Scientist C in Bhaba Atomic Research Centre under Department of Atomic Energy, Government of India in 2007.*
- *Represented our school Table Tennis team at Sub-junior and Junior State level competitions.*

EXTRA CURRICULAR ACTIVITIES

- *Serious follower of World Movies and the Art of movie making as a whole.*
- *Digitization and Restoration of old LP records.*
- *Upscaling of stereo audio tracks to 5.1 channel digital tracks using various media editing software and software filters.*
- *Amateur photography and a serious learner of the art form.*
- *Active participation in Cultural programs, Drama and Community development programs.*

REFERENCES

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